sensor+

CEM+
Configuration Manual

Version 1.2

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Introduction

Congratulations...

on your purchase of an ETC Sensor®+ system. Sensor+ continues ETC's tradition of providing the highest quality products for the entertainment lighting market.

Using this Manual

This manual contains information on using and configuring features of the Sensor+ CEM+ in any Sensor+ rack or pack available up through the **Power User** login user level.

The following symbols are used in this manual to alert you to danger or important information.

Note: *Provides important information about your installation.*

CAUTION: *Alerts you to important information relating to equipment performance or reliability.*

WARNING: *RISK OF ELECTRIC SHOCK! Warns you when electricity may cause injury.*

WARNING: *Warns you when there is the possibility of other types of injury.*

Chapter 1
Overview

This manual covers functions and configuration of the CEM+ and Sensor+ Connect that are available to the **Guest** and **User** and **Power User** login levels.

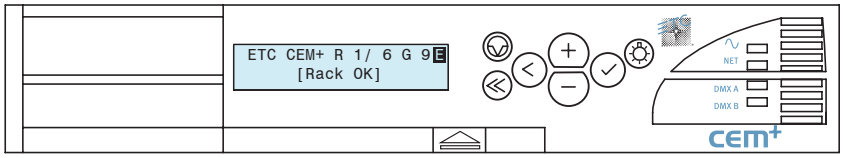
User Level	PIN	Login	Password
Default	none	Just click “Log On”	
Guest	1111	guest	guestpass
User	2222	user	userpass
Power User	3333	power	powerpass

A Sensor+ dimming system controls lighting using EDMX™ control levels from a lighting control system on the ETCNet2™ network and/or DMX512 control levels from a lighting control system on the DMX network and/or architectural presets which can also be used as backup looks. The CEM+ can accept levels from EDMX and up to two DMX512A inputs. The configuration of your dimming system determines which input or combination of inputs will generate the output levels of your dimmers.

System Components

The Sensor+ system consists of Sensor+ racks or packs, CEM+ control modules and various dimmer module types, however a module may contain only a circuit breaker, a relay, or may contain no electronics at all.

CEM+ Control Module



The CEM+ control module is required for Sensor+ dimming systems - the system will not function without a properly configured CEM+. This module serves as the real time processor for incoming control signals and transmits that information to the individual dimmers. It also monitors the system status and reports any errors. The CEM+ module can be used to configure the system. Configuration and error data can be accessed either locally at the CEM+ keypad, or by using the Sensor+ Connect web browser interface.

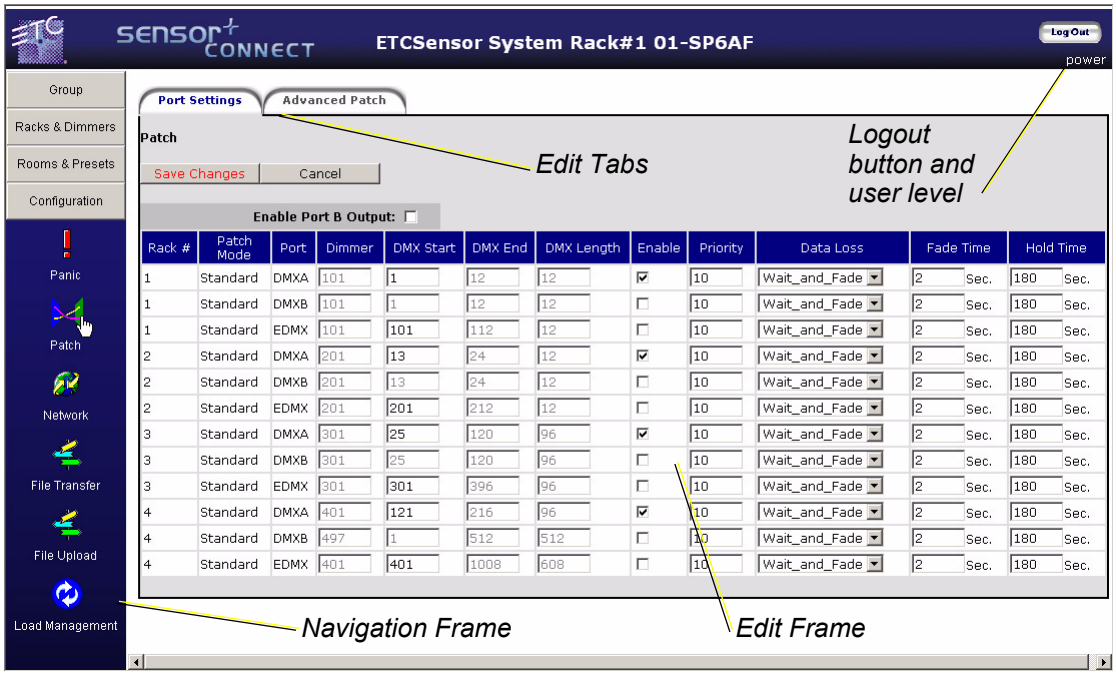
Networked Sensor+ systems can be split into separately configured subsystems called **Groups**. Each configuration can support up to 16 CEM+ modules in a **Group**. The Group configuration is stored in all CEM+ modules in that group. A single ETCNet2 network may contain up to 64 Groups (up to 1024 racks total). One exception to these rules are racks which can contain two CEM+s in redundant tracking mode. In this mode, the number of racks in a Group are limited to 8 racks (still 16 CEM+ modules).

The CEM+ has an Ethernet data input for incoming EDMX data and two DMX512 input ports (Port A and Port B). DMX Port B can be used as a DMX output port for one universe of DMX on the last logical rack in the Group. Data management is determined in the Group configuration.

Sensor+ Connect Web Browser Interface Overview

The CEM+ module contains a web server that delivers graphical web pages for you to use during system configuration. The Sensor+ Connect Web browser interface can be used instead of the direct buttons on the CEM+ module itself. You can use an Ethernet-capable PC connected to the ETCNet2 network and running Windows 2000 or XP and Internet Explorer 6 or later to browse into any of the Sensor+ racks on the network.

If you are using an Emphasis Control System running version 1.8.0 software or later, there is a command in the WYSILink menu that automatically opens a browser window and connects to Sensor+ racks.


SENSOR+ CONNECT
ETCSensor System Rack#1 01-SP6AF
Log Out
power
Group
Racks & Dimmers
Rooms & Presets
Configuration
Panic
Patch
Network
File Transfer
File Upload
Load Management
Port Settings
Advanced Patch
Patch
Save Changes
Cancel
Enable Port B Output:
Edit Tabs
Logout button and user level
Navigation Frame
Edit Frame
Rack # | Patch Mode | Port | Dimmer | DMX Start | DMX End | DMX Length | Enable | Priority | Data Loss | Fade Time | Hold Time
1 Standard DMXA 101 1 12 12 10 Wait_and_Fade 2 Sec. 180 Sec.
1 Standard DMXB 101 1 12 12 10 Wait_and_Fade 2 Sec. 180 Sec.
1 Standard EDMX 101 101 112 12 10 Wait_and_Fade 2 Sec. 180 Sec.
2 Standard DMXA 201 13 24 12 10 Wait_and_Fade 2 Sec. 180 Sec.
2 Standard DMXB 201 13 24 12 10 Wait_and_Fade 2 Sec. 180 Sec.
2 Standard EDMX 201 201 212 12 10 Wait_and_Fade 2 Sec. 180 Sec.
3 Standard DMXA 301 25 120 96 10 Wait_and_Fade 2 Sec. 180 Sec.
3 Standard DMXB 301 25 120 96 10 Wait_and_Fade 2 Sec. 180 Sec.
3 Standard EDMX 301 301 396 96 10 Wait_and_Fade 2 Sec. 180 Sec.
4 Standard DMXA 401 121 216 96 10 Wait_and_Fade 2 Sec. 180 Sec.
4 Standard DMXB 497 1 512 512 10 Wait_and_Fade 2 Sec. 180 Sec.
4 Standard EDMX 401 401 1008 608 10 Wait_and_Fade 2 Sec. 180 Sec.

Sensor+ Connect uses a navigation layout where the various main areas are selected on the left side of the page presenting sub-options. The right side of the page is used to view or edit the selected information.

Note: *The Emphasis Server network settings are the default ETC values and ready for immediate use. No configuration is required.*

You must set an IP address for any personal computer you plan to use on an ETCNet2 network. ETC recommends that the personal computer used on an ETCNet2 network is dedicated to that network so changes to network settings are kept to a minimum. Please see *"Configure Your Computer for an ETCNet2 Network", page 30* for setting up your computer.

Note: *If the computer you wish to use is currently being used on a non-ETCNet2 network please consult your Network Administrator before changing the IP address, Subnet Mask or Gateway IP addresses.*

Sensor+ Dimming System Features

Play back Presets from the CEM+

The CEM+ module provides 128 **Presets** that can be recorded from EDMX, DMX, or directly set levels. You can configure each Preset's name, fade times and playback priority. Presets can

be assigned to any one of four **Rooms** in the configuration. Sensor+ systems can also have the Group play back a Preset in case of data loss.

Sensor+ Connect and WYSIWYG for Feedback

Sensor+ Connect duplicates the functions of the CEM+ module on a PC or Emphasis Server on the ETCNet2 network. The Web browser interface allows you to monitor rack activity, reconfigure dimmer curves, record and activate presets, load and backup configurations, and many other features.

Access to the CEM+ and Sensor+ Connect configuration features is protected by specific user levels and passwords to limit system-altering features to selected personnel, while allowing basic operational functions to a wider range of users.

Note: *Sensor+ Connect and Message logging are available on Emphasis Servers as a base functionality.*

Advanced Features

Sensor+ Advanced Features (AF) racks provide additional reporting features that help you to quickly learn the status of your dimming system and diagnose problems. AF dimmer modules indicate the presence of data and the relative output of power with LED indicators on the modules themselves. Much more information can be displayed on the CEM+ module's integral LCD display, a PC on the network running Sensor+ Connect in a Web browser or WYSIWYG with the WYSIWYG upgrade.

Advanced Features include the ability to record and monitor individual dimmer loads, dimmer removed, SCR fail, breaker trip and several other monitoring tools. Constant comparison of actual dimmer loads against the recorded value lets the system signal you when a load value changes. The change usually indicates a lamp has burned out or failed, allowing you to make an immediate replacement.

Dimmer Doubling™ (60Hz systems only)

ETC's dimmer doubler technology allows you to double the number of controllable circuits in your system without adding dimmer modules or running additional cable. The key to this feature is the dimmer doubler two-fer.

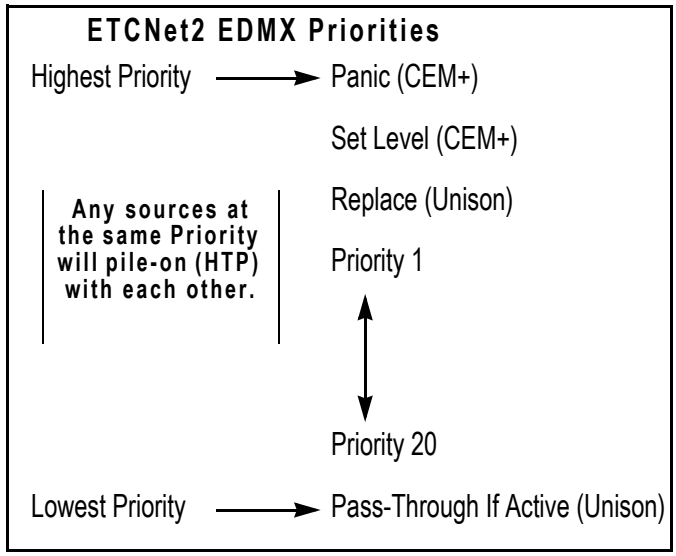
The dimmer doubler two-fer is installed between a Sensor dimmer module and two ETC Source Four 77 volt fixtures. It splits the output of a single dimmer into two, separately-controlled outputs. You can then use an ETC control console to independently control the output of the two fixtures.

Note: *For more information on using dimmer doubler two-fers, see the Dimmer Doubler User Manual. For more information configuring your system for use with Dimmer Doubler two-fers, see the CEM+ Configuration Manual.*

CEM+ Playback Priorities

The CEM+ uses the same priority structure as all of the ETC products that use ETCNet2 and adds two more internally.

Any incoming EDMX is re-prioritized internally on the CEM+ as set on the patch page. The priorities of the EDMX sources (Emphasis, Obsession II, Unison, ETCNet2 DMX Node) are used to determine what level information makes it to the CEM+. That level information is then flatly re-prioritized to the level specified on the patch page.



That means that if (for the same set of EDMX addresses) you set your Emphasis to an EDMX priority of two (2), an Obsession II to a priority of nine (9) and an input port of a DMX Node to a priority of two (2), the level information will pile-on/HTP for the DMX Node and Emphasis and ignore the Obsession II's levels. Internally to a CEM+ that EDMX level information will be prioritized and used at the EDMX priority setting on the patch page (defaults to a priority of 10). The EDMX priority is set on a rack-by-rack basis just like the DMX ports.

Once inside the CEM+, the new priority is used when determining what source level information is used (EDMX, DMX Port A, DMX Port B, Presets, Set Levels and Panic).

EDMX, DMX Port A, DMX Port B, and Presets can all be set with their own priorities (1-20). Set Levels and Panic have fixed priorities above the other priorities. See the inset above.

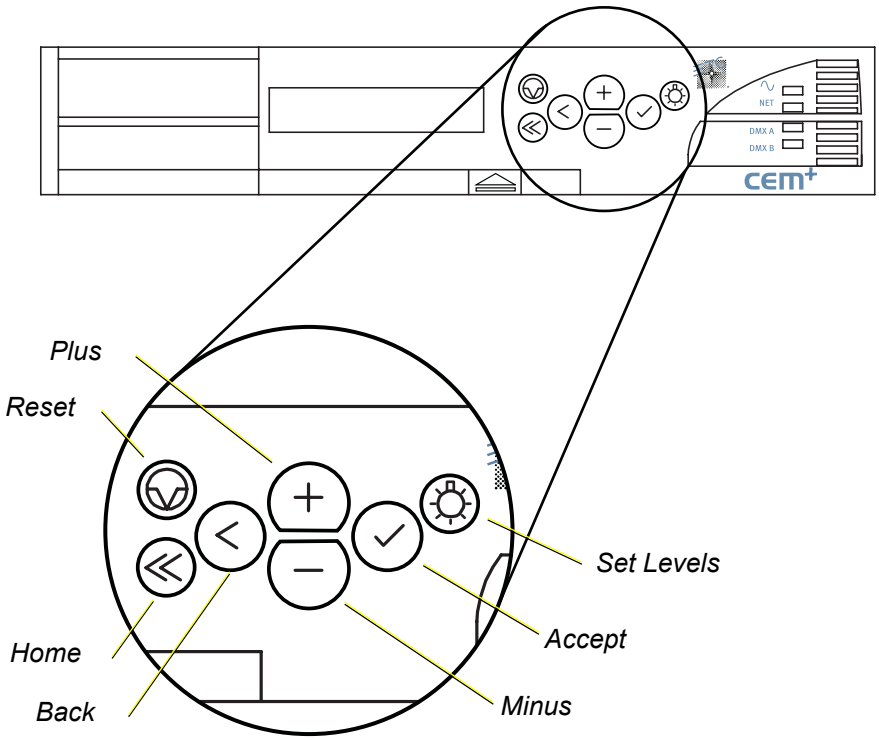
Chapter 2
Basic Navigation

This manual covers functions and configuration of the CEM+ and Sensor+ Connect that are available to the **Guest** and **User** and **Power User** login levels.

User Level	PIN
Default	None
Guest	1111
User	2222
Power User	3333

The CEM+ User Interface

You can access all the menus described in this chapter using the buttons on the face of the CEM+ module. Menus and messages are displayed on the integral 2x20 LCD display.



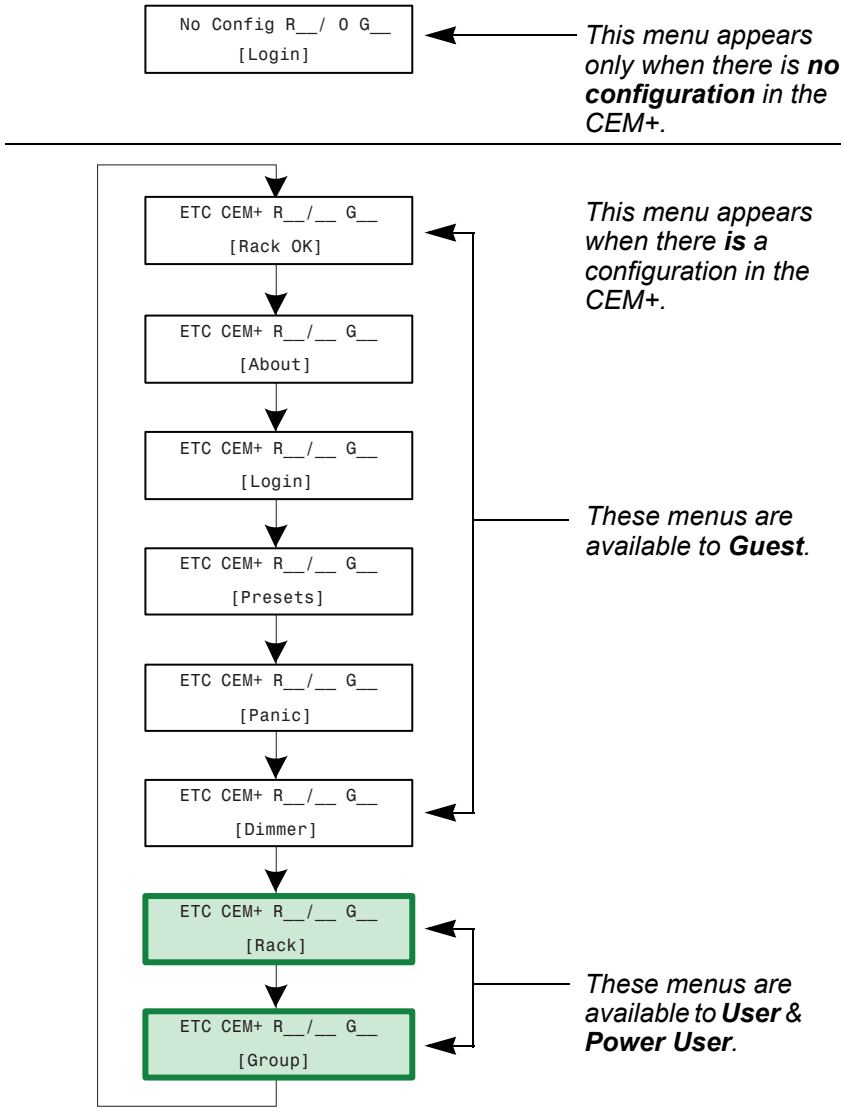
Basic use of the CEM+ user interface:

- Use ⟪ to return to the main menu at any time.
- Use + and − to scroll through menus and through digits and letters in screens requiring user input.
- Use ✓ to accept settings and to view the error list.
- Use < to step back through menus.
- Use ☼ to access the Set Levels menu.
- Use ↺ to reset the CEM+.

The procedures covered in this section are available to users logged in as **Guest**, which requires no password or PIN, and **User** and **Power User** which do require a password or PIN.

The Main Menu

The main menu is accessed using the (+) and (−) buttons on the CEM+ face panel. Each of the main menu items is described in the following pages. Each main menu item contains a number of sub-menus, each of which is illustrated in each section. To return to the CEM+ resting display (the display at the top of the diagram to the right), press (≪).



For the full menu structure, please *See "Appendix E: CEM+ LCD Menu" on page 60.*

NoConfig

The NoConfig menu provides a place to make initial base settings and begin to create a

configuration for the local CEM+. The NoConfig menu has no login requirements and anyone has access to these menu items.

Set Group / Rack

The Set Group / Rack menu allows you to set the rack number of your local rack and the group number it belongs to. It also provides a place to set the network information (IP address, subnet mask and gateway IP). This should be done before creating a configuration.

Generate Defaults

The Generate Defaults menu allows you to create an initial configuration for your local rack. You can set your group and rack numbers along with rack type and dimmer information. However, you can only add multiple racks of the same type. Additional racks or rack types must be added later via the Add Racks menu item. For the face panel menu see *Add Rack [Power], page 14* and for the web interface see *Add Racks, page 19*.

- Rack Types: **SRxx** is the U.S. style perminent installation rack and **SPxx** is the U.S. style type of portable rack (including touring racks). **ESRxx** and **ESPxx** are for European installation racks and portable racks respectively. In all cases, the “xx” number is determined by the number of slots in the rack for modules (***not*** the number of dimmers).

Select Config

After selecting this function, you will be prompted with the name of the rack you want to get the configuration from. Options will include **Server** which refers to an FTP server if one is configured on your lighting network. Please see the section *FTP Server, page 43* for more information about setting up an FTP server for use with CEM+. It will then transfer the configuration to the local CEM+. After the transfer is complete, you will get a confirmation or error message for the transfer.

Setup Network

The Setup Network menu allows you to configure the IP addresses in the network table of the local CEM+. These are the IP addresses that the local CEM+ will use to communicate with other CEM+s in the group. Making changes in this menu does not change the actual IP addresses of other CEM+s, just what this CEM+ thinks they should be. You can also enable or disable a selected CEM+ network entry in the table. This will determine if the local CEM+ will attempt to share information with that unit. Lastly, you can enable or disable whether the local CEM+ will look for a bootp server for IP address information. **Currently, it is strongly recommended that you leave the bootp setting disabled.**

About

The About menu provides status information about the dimmers, racks, network and Group. Everything in the About menu is accessible by all users. No settings can be changed within the About menu. Data can only be viewed.

About Dimmer provides information about a selected dimmer, including recorded and actual loads, the dimmer type, curve and maximum voltage. You can also view the current output level, the source of that level, and the dimmer’s location.

Rack General

The Rack General menu provides the current ambient temperature and air flow status of the selected rack. It also displays the rack type, the air filter cleaning reminder setting, and the number of hours until the air filter cleaning reminder is due.

Rooms & Presets

About Rooms & Presets provides information on the room and preset settings for the rack you are currently browsing.

Network

About Network provides the network settings for the currently selected rack. You can view the settings for any rack in the Group.

Rack Data

About Rack Data provides status information for the DMX and EDMX inputs for any rack in the Group.

Rack Power

About Rack Power provides status information for the line feed power and the voltage headroom settings for any rack in the Group.

Identify Rack

Identify Rack flashes the LCD and buttons on the face panel of the selected rack.

Group

About Group provides the software version currently installed in the racks, the status of the Panic state and the name of the Group.

Rack Address

About Rack Address provides the DMX A and B starting addresses for each rack in the Group.

Login

The Login menu is where you enter the PIN number for the user level you want to access. **Guests** need no PIN to view the menu items accessible to them. You will need to enter a four-digit PIN to gain access to features that are restricted to higher user levels. Enter **2222** for **User** level access and **3333** for **Power User** level access. Use (+) and (−) to scroll the digits and use (✓) to enter the set digit.

Presets

The Presets menus are used to activate and deactivate Presets at the rack. If you are logged in at the **User** level, you can also record and modify Presets from the CEM+.

There are four available Rooms and 128 available Presets in a single Group. A Room is a way of grouping dimmers - such as “Lobby” or “Auditorium”. An individual Preset can only control dimmers assigned to the same Room. For example, a Preset with dimmers assigned to the Room named “Lobby” cannot also control dimmers in the Room “Auditorium”.

Presets can also be assigned Priority. Priority is a function of ETCNet2 that defines how various sources of control interact with dimmers. The default priority for controllers on the network is 10. When controllers share the same priority level, a single dimmer assigned to those controllers will output the highest level it receives. If the controllers are at different priorities, the highest-priority controller (lowest priority number - a priority of 1 wins versus a priority 10) will win and the dimmer will output the level sent by that controller.

Activate Preset

The Activate Preset menu allows you to activate a selected preset.

Deactivate Presets

The Deactivate Preset menu allows you to deactivate a selected preset.

Clear Presets [**User**]

The Clear Presets menu allows a **User** to delete a selected preset.

Record Presets [**User**]

The Record Presets menu allows a **User** to assign a preset number, and set the source for levels, the fade time and playback priority and the room. If the preset number is already recorded, you can record over it with the new settings, or if the preset is empty, you can record these settings to that selected number.

Set Fade Time [**User**]

The Set Fade Time menu allows a **User** to customize the fade time for a recorded preset.

Set Priority [**User**]

The Set Priority menu allows a **User** to customize the priority for a recorded preset.

Set Preset Name [**User**]

The Set Preset Name menu allows a **User** to customize the name of a recorded preset. Names are alphanumeric and can be up to 20 characters long (not all 20 characters will be visible on the LCD). Presets are assigned a default name of “Preset###” where ### is a three-digit number up to 128.

Set Room Name [**User**]

The Set Room Name menu allows a **User** to set the name of a room.

Max Active Presets [**User**]

The Max Active Presets menu allows a **User** to set the maximum number of active presets for a selected room.

Panic [Guest][User][Power]

The Panic menu allows a **Guest** to activate and deactivate the Panic look and allows a **User** to record or clear the Panic look.

Activate Panic

The Activate Panic menu toggles between “Activate” and “Deactivate”, depending on the status of the Panic look.

Record Panic [**User**]

The Record Panic menu allows you to record dimmers that currently have an output level at the Master Level (or greater) to the Panic look. You can set the Master Level to anything between 80% and 100%. When the Panic look is activated, the assigned dimmers will all output at the Master Level. You can also choose to set all other dimmers to turn off when panic is activated.

Clear Panic [**User**]

The Clear Panic menu allows you to clear the current Panic settings.

Configure Switches [**Power**]

The Configure Switches menu allows you to define the external switch action types (maintained vs. momentary) and resting states (normally-open vs. normally-closed).

Dimmer [Guest][User][Power]

The Dimmer menu allows **Guest** access to setting and releasing dimmer levels, and allows **User** access to module setup items such as setting the module type, curve, name, firing mode and properties. The Dimmer menu also allows a **User** to perform a dimmer check.

Set Levels

The Set Levels menu allows you to set a dimmer or a range of dimmers to a specified level

at the CEM+. Levels set here take priority over any other level inputs, such as control consoles and architectural control systems. Levels set here do not take priority over levels generated by an active Panic look.

The ⊛ button on the CEM+ face panel accesses this menu directly.

Release Levels

The Release Levels menu allows you to release the level of a dimmer or a range of dimmers. Once released, those dimmers are available to other control inputs.

Set Module Type [**User**]

The Set Module Type menu allows a **User** to set a dimmer or range of dimmers to a specific module type and firing mode. If the module is set to “Fluorescent”, you also set the threshold in this menu. Threshold is the control level that must be present for the fluorescent dimmer to output voltage based on the selected curve.

Set Curve [**User**]

The Set Curve menu allows a **User** to set a dimmer or a range of dimmers to a specific curve. A dimmer curve is a mathematical function that maps control levels to RMS output voltage. Curves are scaled from the minimum voltage to the maximum voltage (settings that are not available to the **User** login). The CEM+ supports the following curves: Square, Mod Square, Linear, Mod Linear, Sensor 2.0. See *Dimmer Curves, page 52*, for more information.

Set Dimmer Name [**User**]

The Set Dimmer Name menu allows a **User** to name a dimmer. Names are alphanumeric and can be up to 20 characters long (not all 20 characters will be visible on the LCD). Dimmers are assigned a default name of “Dimmer#####” where ##### is a five-digit number up to 32767.

Set Firing Mode [**User**]

The Set Firing Mode menu allows a **User** to set a dimmer or a range of dimmers to a specific firing mode. Available modes include Normal, Off, Switched, Fluorescent and DD (Dimmer Doubled).

- Off: turns the dimmer off.
- Normal: operates as a standard incandescent dimmer.
- Switched: dimmers output unregulated AC voltage when the control level is above the threshold level.
- DD (Dimmer Doubled): dimmer operates as two controllable circuits. See *Dimmer Doubling™ (60Hz systems only), page 4*.

Note: *Changing the dimmer firing mode will cause a change to default settings for curve, minimum voltage, maximum voltage, threshold and regulation. Whenever a dimmer mode is set the defaults for that mode will be applied to the other dimmer properties.*

Set Properties [**User**]

The Set Properties menu allows a **User** to set Voltage Regulation, Dynamic Preheat, DC Output Prevent and Inrush Settings for a dimmer or range of dimmers.

- Voltage Regulation: when enabled, the dimmer will regulate to the desired output voltage. When disabled, the dimmer will be set to a constant firing time based on the control level. This setting defaults “on”. The ability to disable regulation is sometimes useful when dimming non-tungsten loads.

- Dynamic Preheat: this setting allows quick blackouts on dimmers that are set to preheat. Preheat settings are not available to the **User** level login.
- DC Output Prevent: this setting offers protection on selected dimmers for loads that are sensitive to DC buildup, which can occur under certain conditions when positive and negative half-cycles become uneven.
- Inrush Protection: this setting protects against large voltage increases in a single AC cycle. This protection is useful for high-wattage loads (especially if comprised of many smaller wattage lamps) that may cause nuisance tripping of circuit breakers and to limit peak currents in wiring and switchgear. This protection is particularly useful on RCD/GFCI protected circuits. Settings for inrush protection include: Instant, 100mS (for loads up to 10A), 300mS (for loads up to 25A) and 500mS (for loads of 50 or 100A).

Set Threshold [**Power**]

The Set Threshold menu allows a **Power User** to set a dimmer or a range of dimmers to come on at a specific control level.

Set Max Scale Voltage [**Power**]

The Max Scale Voltage menu allows a **Power User** to set a dimmer or a range of dimmers to a maximum output voltage that is the top (100% control) of the scaled output of that dimmer.

Set Min Scale Voltage [**Power**]

The Min Scale Voltage menu allows a **Power User** to set a dimmer or a range of dimmers to a minimum output voltage that is the bottom (1% control) of the scaled output of that dimmer. The dimmer will switch on to an RMS output voltage of Min Scale Voltage when the control level reaches the value set for threshold. This is also the dynamic preheat value for the dimmer.

Assign Dim to Room [**Power**]

The Assign Dimmer to a Room menu allows a **Power User** to set a dimmer or a range of dimmers to a specific room for use with recording presets. A dimmer can only be assigned to a single room at a time. There are four (4) rooms available and all dimmers default to being assigned to Room 1.

Advanced Features [**Power**]

The Advanced Features menu allows a **Power User** to set Advanced Features (on/off), Report Load Errors, AF Sensitivity, and AF Reaction Time for a dimmer or range of dimmers.

- Advanced Features (on/off): additional feedback from a dimmer that provides load recording/reporting and advanced error reporting including a breaker trip, module removed, load changes, dc output and SCR failures.
- Report Load Errors (on/off): allows for messages to report load changes once initial loads have been recorded for a dimmer.
- AF Sensitivity (1 to 10): defines the resolution of the advanced features sensitivity in reporting load changes. One (1) is the most sensitive/highest resolution setting and the default is 5. AF sensitivity is based on a percentage of the recorded load.
- AF Reaction Time (5 to 60 seconds): this setting defines the hysteresis for an advanced feature error. The error must be present for the minimum set in the AF Reaction Time before an error will be reported.

Dimmer Check [**User**]

The Dimmer Check menu allows a **User** to set an output level and then step through dimmers at a selected starting point.

Rack [User][Power]

The Rack menu includes menus for setting the rack name and patch settings. The Rack menu is available only to those logged in at the **User** or **Power User** level.

Set Group / Rack [**Power**]

The Set Group / Rack menu allows you to set the rack number of your local rack and the group number it belongs to. This should be done before creating a configuration. Care and understanding should be used when making a change to these settings after a configuration is already loaded.

Set Rack Type [**Power**]

The Set Rack Type menu allows you to set the rack type of the selected rack. The options of this menu are determined by the operating voltage specified during the rack configuration creation.

Set Rack Name [**User**]

The Set Rack Name menu allows you to set the name of the rack you are currently browsing. Names are alphanumeric and can be up to 20 characters long (not all 20 characters will be visible on the LCD).

Set Patch Mode [**User**]

The Set Patch Mode menu allows a **User** to set the patch mode for a selected rack. The patch mode can be set to “Standard” or “Advanced”.

Set Patch [**User**]

The Set Patch menu allows a **User** to enable and disable DMX and EDMX inputs, set their priority and create the patch for those input ports. The choices that appear are dependent on the patch mode set in the previous menu.

In Standard patching, you set the first dimmer number to be addressed by a selected DMX or EDMX address and the length of the DMX or EDMX stream to be used for that port - for example: setting the first dimmer to 1 and the DMX Start to 101 and the DMX Length to 24 will cause dimmer #1 to respond to input levels on DMX channel 101, dimmer #2 to respond to DMX 102, and so on until dimmer #24.

In Advanced patching, you set a discrete DMX or EDMX address for each dimmer number.

Data Loss Behavior [**User**]

Data Loss Behavior can be set independently for each input port (DMX A, DMX B and EDMX) in each rack in the Group. Data loss behavior options are: Hold Last Look, Wait & Fade Out and Generate Event. When data is restored, the source look will fade in at a 2-second rate.

- Hold Last Look: the CEM+ will hold any active dimmers at whatever levels they were receiving when the data was lost. The dimmers will remain on until data is restored or the CEM+ is reset.
- Wait & Fade: the CEM+ will hold any active dimmers at whatever levels they were receiving when the data was lost for a user-defined amount of time and then fade those dimmers to zero (or to the levels generated by the next highest priority source) in a user-defined fade time. The maximum wait and fade time is 60:59 minutes.
- Crossfade To: this setting will play back Preset 128 when data is lost. The default fade time for Preset 128 is 2 seconds. If this time is changed, both sides of the crossfade (the fade into Preset 128 and the fade back into restored data) will use the new time.

Voltage Headroom [**Power**]

This menu allows you to specify the threshold for the incoming voltage at which a warning will appear to notify you about a drop in voltage.

Set Network [**User**]

Set Network allows a **User** to enable or disable the network, enable or disable BootP (defaults to disabled) and set the network addressing for a selected rack.

Set First Dimmer [**User**]

Set First Dimmer allows you to set the first dimmer number in a selected rack. For example, in a two SR48 rack Group, Rack 1 can be set with a First Dimmer of 1, and Rack 2 can be set with a First Dimmer of 97.

Set Temp Alarm [**User**]

The Temp Alarm is used to generate a warning when the ambient temperature monitored by the rack exceeds a user-defined level. Use the Set Temp Alarm menu to set that level for the selected rack.

Set Phase Balance [**User**]

The Set Phase Balance menu allows you to set the type of phasing used by the selected rack and the voltage of the line feed power. Available settings include: Balanced-3Phase, Balanced-1Phase, Straight-3Phase and Straight-1Phase.

- Balanced-3Phase: rack is fed 3-Phase power and dimmer numbers are distributed numerically by phase, rather than by rack position. Example: dimmers 1 and 2 are in the top slot of a rack; dimmers 3 and 4 are located first on the second phase, 1/3 of the way down the rack; dimmers 5 and 6 are located first on the third phase, 2/3 of the way down the rack.
- Balanced-1Phase: rack is fed split-phase power and dimmer numbers are distributed numerically by bus bar, rather than by rack position. Example: dimmers 1 and 2 are in the top slot of a rack; dimmers 3 and 4 are located in the first dimmer module of the bus bar, 1/2 of the way down the rack.
- Straight3-Phase: rack is fed 3-Phase power and dimmer numbers are distributed numerically from top to bottom in the rack. Example: dimmers 1 and 2 are in the top slot of a rack, dimmers 3 and 4 are located in the next slot, etc.
- Straight1-Phase: rack is fed 1-Phase power and dimmer numbers are distributed numerically from top to bottom in the rack. Example: dimmers 1 and 2 are in the top slot of a rack, dimmers 3 and 4 are located in the next slot, etc.

Add Rack [**Power**]

The Add Rack menu is the place to add additional racks to your existing configuration. You do this by specifying: the rack voltage, the rack type, first dimmer in the rack, the patch mode, the ambient alarm temperature, the default module type, the phase balancing, and whether or not to enable advanced features for the rack.

Air Filter Timer [**User**]

The Air Filter Timer menu allows you to set the amount of time between air filter cleaning reminders for a selected rack. This timer counts down only when the fan is running in the rack.

Advanced Features [**Power**]

The Advanced Features menu allows you to enable/disable Advanced Features (AF) for a selected rack in the group.

Configure Fan [**User**]

The Configure Fan menu allows you to configure the behavior of the fan in the selected rack. Available settings include: No Data/15 Min and Always On. No Data/15 Min will allow the fan to shut off if there have been no dimmer levels sent to that rack in 15 minutes. When levels are sent to dimmers in the rack, the fan will start up automatically. The fan will always

run for 15 minutes following a reset of the CEM+.

Get Config [**Power**]

After selecting this function, you will be prompted with the name of the rack (1-16) you want to get the configuration from. One option is **Server** which refers to an FTP server if one is configured on your lighting network. Please see the section *FTP Server, page 43* for more information about setting up an FTP server for use with CEM+. It will then transfer the configuration to the local CEM+. After the transfer is complete, you will get a confirmation or error message for the transfer.

Send Config to All [**Power**]

Upon pressing ✓ for this function, you will immediately send the locally contained configuration out to all of the other CEM+s in the group and to the FTP server if one is configured for the group. Please see the section *FTP Server, page 43* for more information about setting up an FTP server for use with CEM+.

Delete All Racks [**Power**]

Immediately after pressing ✓, this operation clears the rack configuration from the local rack (the one you are logged into), but does not clear everything from the CEM+. The network settings, and custom PIN for the face panel remain intact.

Network Defaults [**Power**]

Pressing ✓ on this screen will immediately reset your network table (IP addresses, subnet masks, and gateway IPs) to their defaults for the current Group and Rack settings.

Group [User][Power]

The Group menu includes menus for recording loads, naming the group, setting the preferred units for temperature reporting, and language and login settings. The Group menu is available only to those logged in at the **User** level.

Record Loads [**User**]

The Record Loads menu is used to record the loads on each dimmer. This is useful in Advanced Features systems where load reporting is desired.

Name Group [**User**]

The Name Group menu allows a **User** to set the name of the Group. Names are alphanumeric and can be up to 20 characters long (not all 20 characters will be visible on the LCD).

Set Language [**User**]

The Set Language menu allows a **User** to set the language of the user interface.

Ambient Temp Type [**User**]

The Ambient Temp Type menu allows a **User** to set temperature reporting as either Fahrenheit or Celsius.

Set Login Time-out [**User**]

The Set Login Time-out menu allows a **User** to set the time after which the CEM+ will automatically log the current user out and return to the default access level as set in the Group configuration. The time-out is based upon inactivity at the keypad.

Set PIN [**User**][**Power**]

The Set PIN menu allows you to set the PIN for your current login access level and below. **User** can set the **User** level PIN and **Power** can set the **Power** and **User** level PINs. **Guests** require no PIN for access.

Chapter 3
Sensor+ Connect Web Interface Overview

This section covers functions and configuration of the CEM+ and Sensor+ Connect that are available to the **Guest** and **User** and **Power User** login levels.

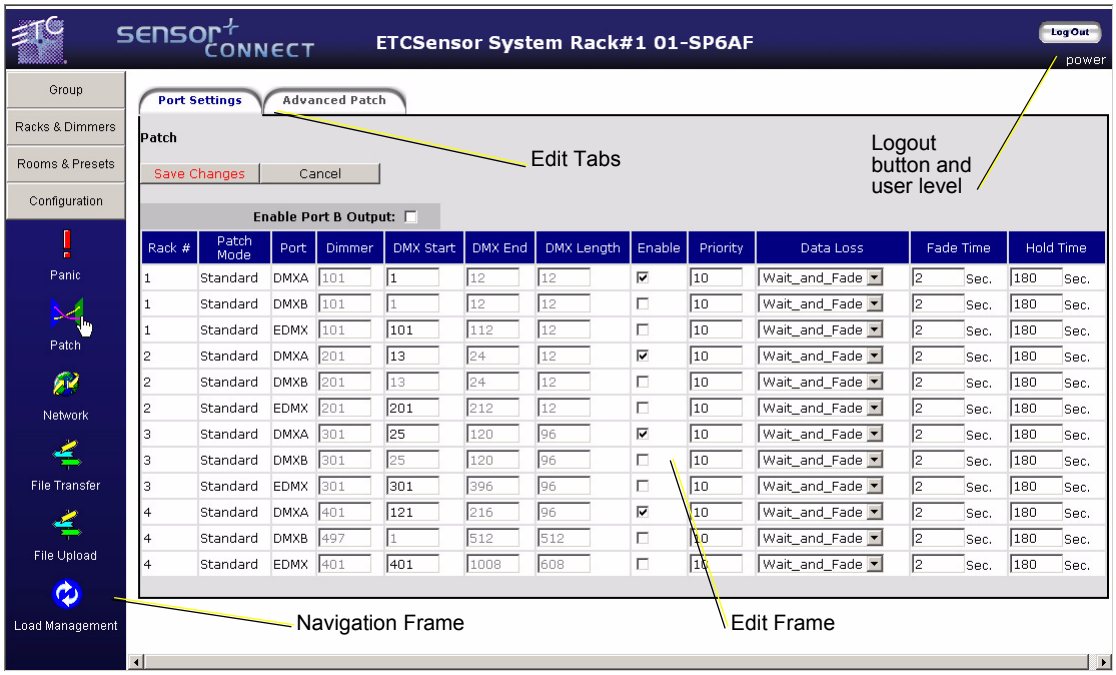
User Level	Login	Password
Default	[empty field]	[empty field]
Guest	guest	guestpass
User	user	userpass
Power User	power	powerpass

The web interface is a series of web pages intended to give you easier access to all of a CEM+ module's features and settings. This section will provide you screenshots of various key pages and provide further insight into how to use them. Setup and configuration procedures are covered in *"Chapter 4: CEM+ Configuration Procedures" on page 30.*

For a complete web interface site map outline, please see *See "Appendix F: Sensor+ Connect Site Map" on page 69.*

The CEM+ module contains a web server that delivers graphical web pages for you to use during system configuration. The Sensor+ Connect Web browser interface can be used instead of the direct buttons on the CEM+ module itself. You can use an Ethernet-capable PC connected to the ETCNet2 network and running Windows 2000 or XP and Internet Explorer 6 or later to browse into any of the Sensor+ racks on the network. Any changes made in the web interface are not communicated to the CEM+ until you send that information by clicking **Save Changes** on that page.

If you are using an Emphasis Control System running version 1.8.0 software or later, there is a command in the WYSILink menu that automatically opens a browser window and connects to Sensor+ racks.



Sensor+ Connect uses a navigation layout where the various main areas are selected on the left side of the page presenting sub-options. The right side of the page is used to view or edit the selected information.

Note: *The Emphasis Server network settings are the default ETC values and ready for immediate use. No configuration is required.*

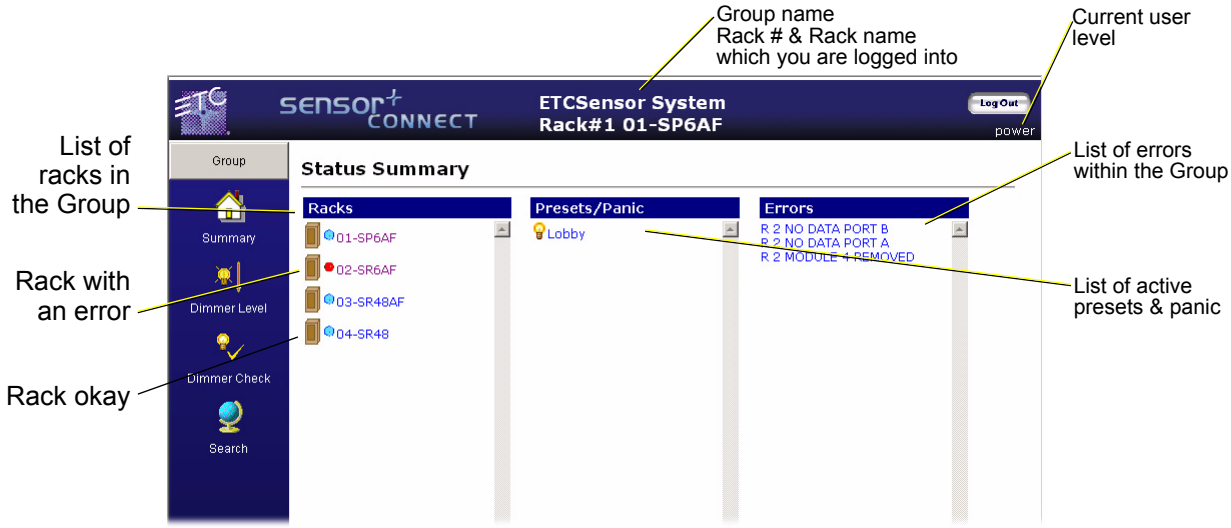
You must set an IP address for any personal computer you plan to use on an ETCNet2 network. ETC recommends that the personal computer used on an ETCNet2 network is dedicated to that network so changes to network settings are kept to a minimum.

Note: *If the computer you wish to use is currently being used on a non-ETCNet2 network please consult your Network Administrator before changing the IP address, Subnet Mask or Gateway IP addresses.*

Group

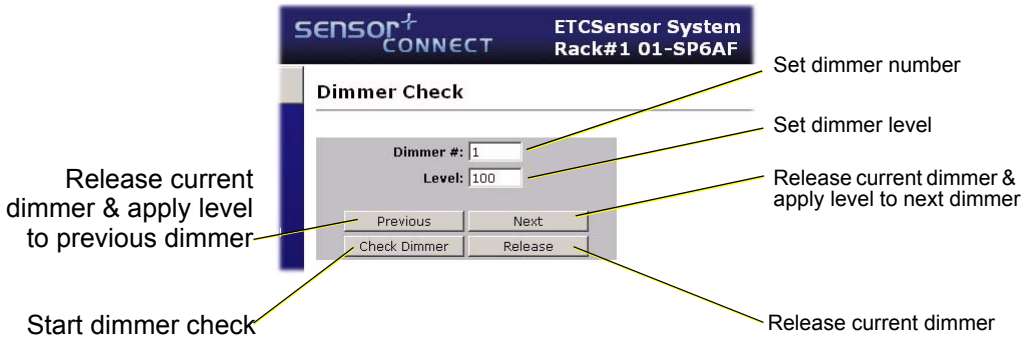
Summary Status

This is the Status Summary page. It's the first page after you login to a CEM+.



Dimmer Check

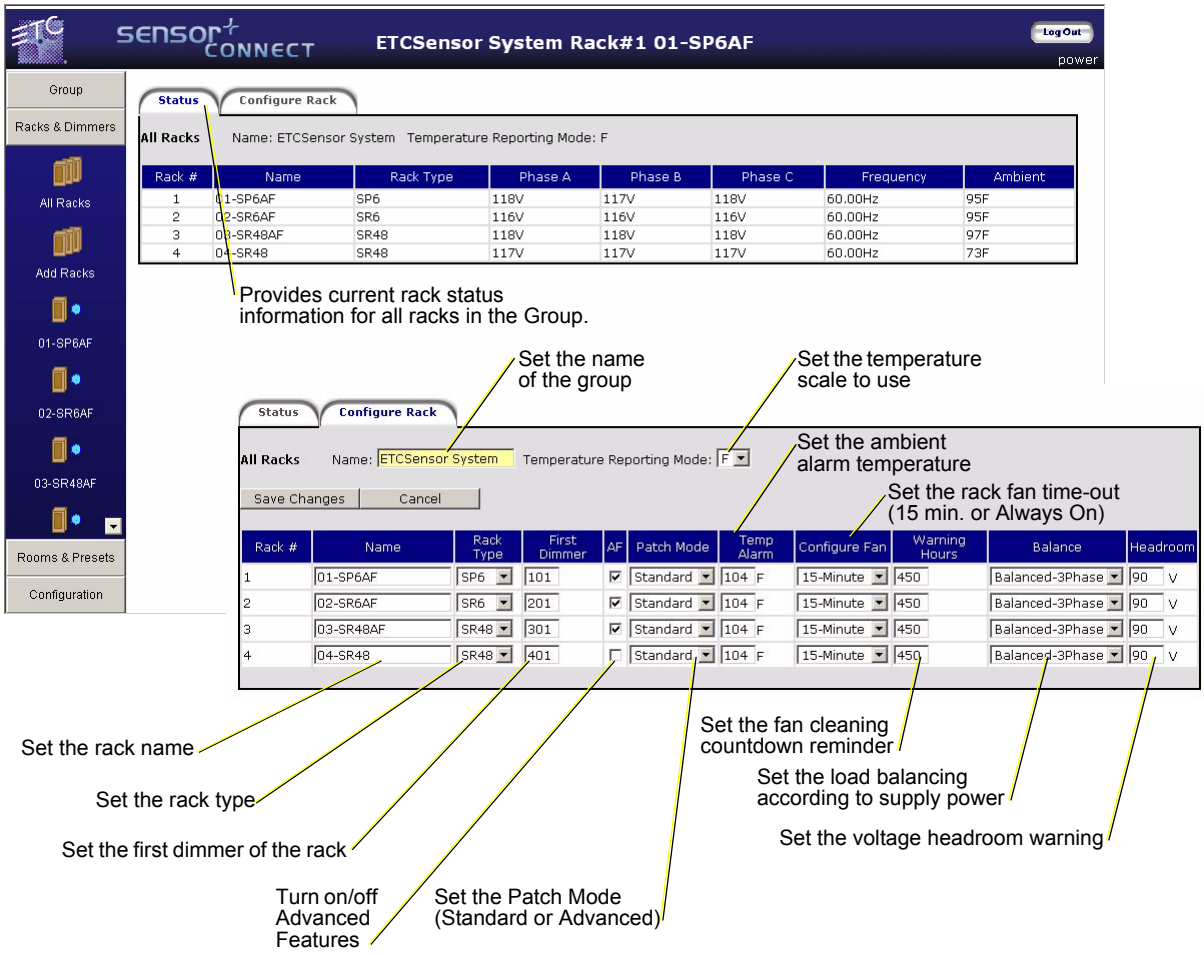
Also from the Group section is the Dimmer Check page. This page provides a quick and easy method to step through individual dimmers to do a dimmer check.



Racks & Dimmers

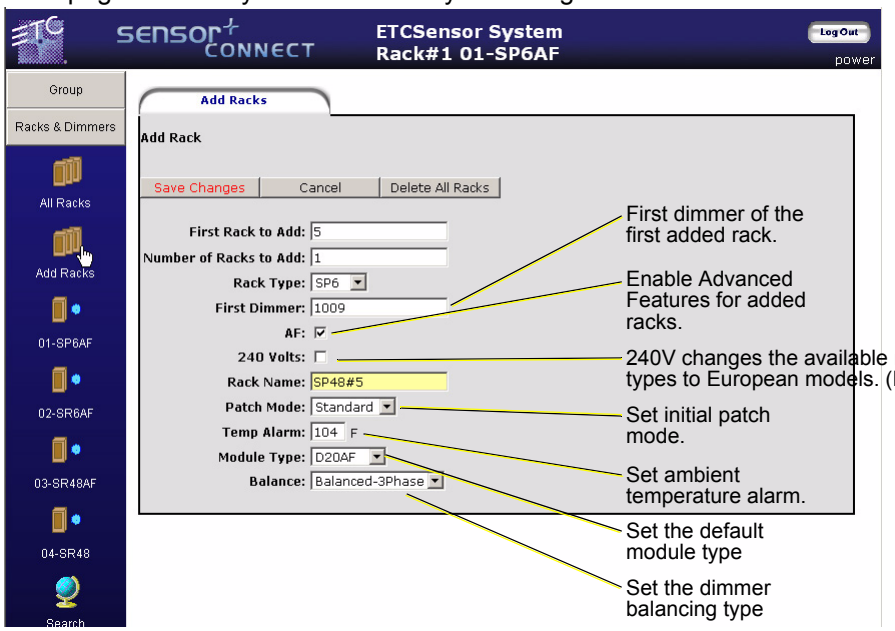
All Racks

All Racks provides a place to access and set the properties of all racks in the configuration.


ETCSensor System Rack#1 01-SP6AF
Log Out
power
Group
Racks & Dimmers
All Racks
Add Racks
01-SP6AF
02-SR6AF
03-SR48AF
Rooms & Presets
Configuration
Status
Configure Rack
All Racks
Name: ETCSensor System
Temperature Reporting Mode: F
Save Changes
Cancel
Rack # | Name | Rack Type | Phase A | Phase B | Phase C | Frequency | Ambient
1 | 01-SP6AF | SP6 | 118V | 117V | 118V | 60.00Hz | 95F
2 | 02-SR6AF | SR6 | 116V | 116V | 116V | 60.00Hz | 95F
3 | 03-SR48AF | SR48 | 118V | 118V | 118V | 60.00Hz | 97F
4 | 04-SR48 | SR48 | 117V | 117V | 117V | 60.00Hz | 73F
Rack # | Name | Rack Type | First Dimmer | AF | Patch Mode | Temp Alarm | Configure Fan | Warning Hours | Balance | Headroom
1 | 01-SP6AF | SP6 | 101 | Standard | 104 F | 15-Minute | 450 | Balanced-3Phase | 90 V
2 | 02-SR6AF | SR6 | 201 | Standard | 104 F | 15-Minute | 450 | Balanced-3Phase | 90 V
3 | 03-SR48AF | SR48 | 301 | Standard | 104 F | 15-Minute | 450 | Balanced-3Phase | 90 V
4 | 04-SR48 | SR48 | 401 | Standard | 104 F | 15-Minute | 450 | Balanced-3Phase | 90 V
Provides current rack status information for all racks in the Group.
Set the name of the group
Set the temperature scale to use
Set the ambient alarm temperature
Set the rack fan time-out (15 min. or Always On)
Set the rack name
Set the rack type
Set the first dimmer of the rack
Turn on/off Advanced Features
Set the Patch Mode (Standard or Advanced)
Set the fan cleaning countdown reminder
Set the load balancing according to supply power
Set the voltage headroom warning

Add Racks

This page is where you add racks to your configuration.



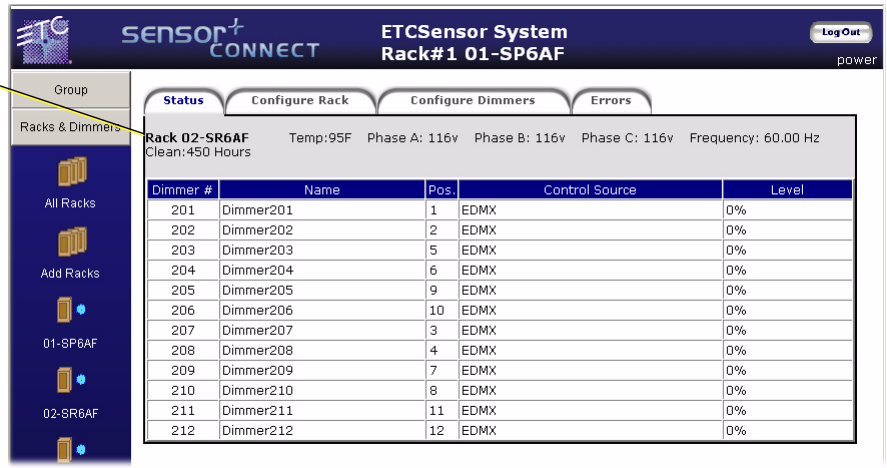
To change the rack and module types to the European models, click the **240V** check box. After checking **240V**, you must click **Save Changes** before you will see the available rack and module types change to European (ESR/ESP) models. Clicking **Save Changes** the first time after the 240V check box has been altered (checkmark vs. no checkmark) will not add a rack to the group.

Rack

Status

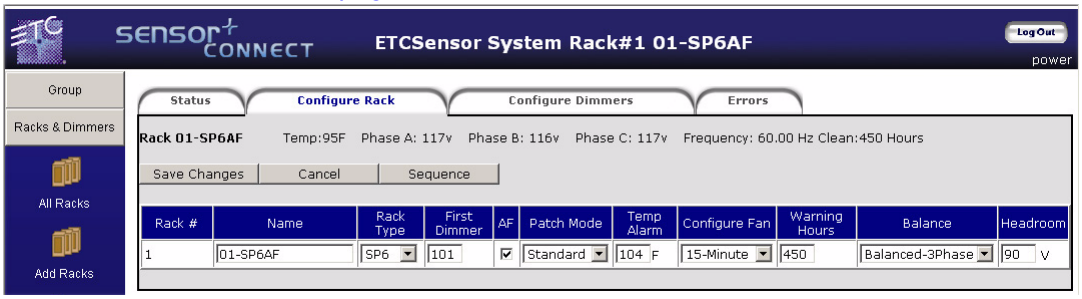
This page displays the individual rack's power information, the dimmers' control source and current intensity level.

Displays which rack's info you are viewing which may


SENSOR+ CONNECT
ETCSensor System
Rack#1 01-SP6AF
Log Out
power
Group
Racks & Dimmers
All Racks
Add Racks
01-SP6AF
02-SR6AF
Status
Configure Rack
Configure Dimmers
Errors
Rack 02-SR6AF
Clean:450 Hours
Temp:95F
Phase A: 116v
Phase B: 116v
Phase C: 116v
Frequency: 60.00 Hz
Dimmer # | Name | Pos. | Control Source | Level
201 | Dimmer201 | 1 | EDMX | 0%
202 | Dimmer202 | 2 | EDMX | 0%
203 | Dimmer203 | 5 | EDMX | 0%
204 | Dimmer204 | 6 | EDMX | 0%
205 | Dimmer205 | 9 | EDMX | 0%
206 | Dimmer206 | 10 | EDMX | 0%
207 | Dimmer207 | 3 | EDMX | 0%
208 | Dimmer208 | 4 | EDMX | 0%
209 | Dimmer209 | 7 | EDMX | 0%
210 | Dimmer210 | 8 | EDMX | 0%
211 | Dimmer211 | 11 | EDMX | 0%
212 | Dimmer212 | 12 | EDMX | 0%

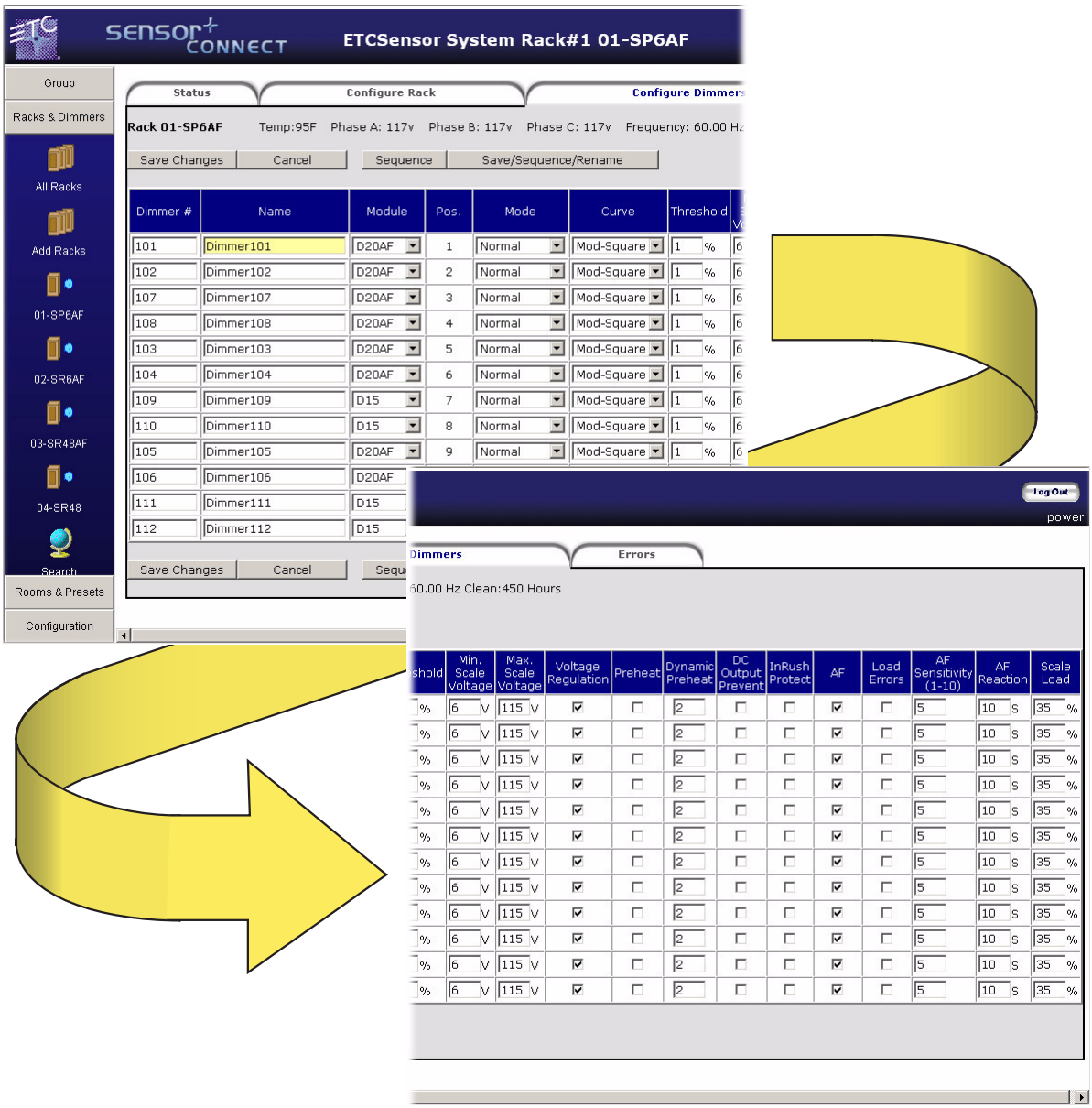
Configure Rack

This page is the individual rack equivalent to the All Racks/Configure Rack page listed above. *See "All Racks" on page 18.*



Configure Dimmers

This webpage provides a single place to set all of your dimmer's properties. Below is a list explaining each one of the settings.



Set Dimmer Name [User]

The Set Name menu allows a **User** to name a dimmer. Names are alphanumeric and can be up to 20 characters long (not all 20 characters may be visible on the LCD).

Set Module Type [Power]

The Set Module Type menu allows a **User** to set a dimmer or range of dimmers to a specific module type and firing mode. If the module is set to “Fluorescent”, you also set the threshold in this menu. Threshold is the control level that must be present for the fluorescent dimmer to output voltage based on the selected curve.

Pos (Position) [Power]

This is a display only field. It lists the position of each circuit within a rack.

Set Firing Mode [Power]

The Set Firing Mode menu allows a **User** to set a dimmer or a range of dimmers to a specific firing mode. Available modes include Normal, Off, Switched, Fluorescent and DD (Dimmer Doubled).

- Off: turns the dimmer off.
- Normal: operates as a standard incandescent dimmer.
- Switched: dimmers output unregulated AC voltage when the control level is above the threshold level.
- DD (Dimmer Doubled): dimmer operates as two controllable circuits. See *”Dimmer Doubling™ (60Hz systems only)”, page 4*.

Note: *Changing the dimmer firing mode will cause a change to default settings for curve, minimum voltage, maximum voltage, threshold and regulation. Whenever a dimmer mode is set the defaults for that mode will be applied to the other dimmer properties.*

Set Curve [User]

The Set Curve menu allows a **User** to set a dimmer or a range of dimmers to a specific curve. A dimmer curve is a mathematical function that maps control levels to RMS output voltage. Curves are scaled from the minimum voltage to the maximum voltage (settings that are not available to the **User** login). The CEM+ supports the following curves: Square, Mod Square, Linear, Mod Linear, Sensor 2.0. See *”Dimmer Curves”, page 52*, for more information.

Set Threshold [Power]

The Set Threshold menu allows a **Power User** to set a dimmer or a range of dimmers to come on at a specific intensity level.

Set Min Scale Voltage [Power]

The Min Scale Voltage menu allows a **Power User** to set a dimmer or a range of dimmers to a minimum output voltage that is the bottom (1% control) of the scaled output of that dimmer.

Set Max Scale Voltage [Power]

The Max Scale Voltage menu allows a **Power User** to set a dimmer or a range of dimmers to a maximum output voltage that is the top (100% control) of the scaled output of that dimmer.

Voltage Regulation [Power]

When enabled, the dimmer will regulate to the desired output voltage. When disabled, the dimmer will be set to a constant firing time based on the control level. This setting defaults “on”. The ability to disable regulation is sometimes useful when dimming non-tungsten

loads. When disabling Voltage Regulation, you should also set the Maximum Scale Voltage to a level well above the incoming line voltage to ensure that power wave is not clipped in any way.

Preheat [Power]

This setting enables/disables preheat for the selected dimmer. The preheat level is the Minimum Scale Voltage.

Dynamic Preheat [Power]

This setting allows quick blackouts on dimmers that are set to preheat. It sets the amount of time a dimmer will remain at a zero (0) level before returning to the preheat level. It can be set from 0.5 seconds to 15 seconds and has a default of 2 seconds.

DC Output Prevent [Power]

This setting offers protection on selected dimmers for loads that are sensitive to DC buildup, which can occur under certain conditions when positive and negative half-cycles become uneven.

Inrush Protection [Power]

This setting protects against large voltage increases in a single AC cycle. This protection is useful for high-wattage loads that may cause nuisance tripping of circuit breakers and to limit peak currents in wiring and switch gear. This protection is particularly useful on RCD/GFCI protected circuits. Settings for inrush protection include: Instant, 100mS (for loads up to 10A), 300mS (for loads up to 25A) and 500mS (for loads of 50 or 100A).

Advanced Features (AF) [Power]

Enables/disables additional feedback from a dimmer that provides load recording/reporting and advanced error reporting including a breaker trip, module removed, load changes, dc output and SCR failures.

(Report) Load Errors [Power]

Enables/disables messages to report load changes once initial loads have been recorded for a dimmer. Load errors must be enabled to record loads in **Load Management**. *See "Load Management" on page 29.*.

AF Sensitivity (1-10) [Power]

This setting defines the resolution of the advanced features sensitivity to report load changes. One (1) is the most sensitive/highest resolution setting and the default is 5. AF sensitivity is based on a percentage of the recorded load.

AF Reaction (Time) [Power]

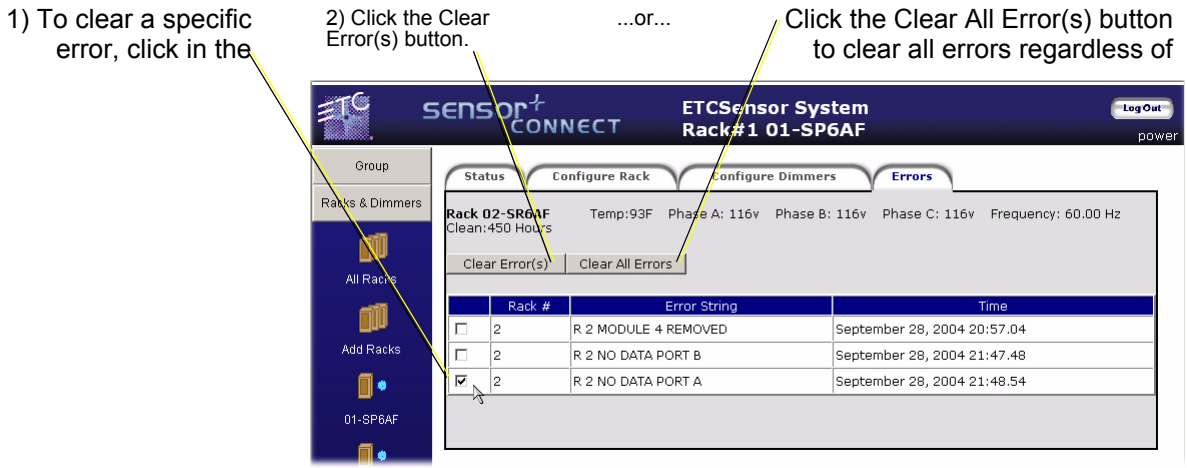
This setting defines the hysteresis for an advanced feature error. The error must be present for the minimum set in the AF Reaction Time before an error will be reported. Five (5) seconds is the shortest amount of time and 60 seconds is the longest allowed.

Scale Load [Power]

This setting adjusts the choke correction curve based on the specified percent load of the maximum for that dimmer type. Scale Load can be set from 1% to 100% and should reflect the approximate percent load on a given dimmer to precisely match all dimmed load. The default setting is 35% which is based on a single Source Four 750w fixture on a D20 dimmer with a max scale voltage of 115Vac.

Errors

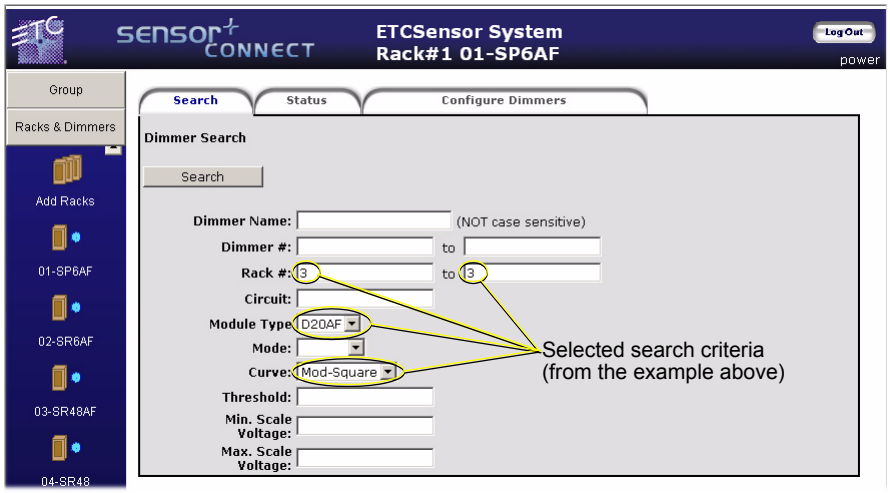
Errors for a rack can be viewed and cleared on this webpage.



Search

The Search pages (search appears multiple times within the CEM+) allow you to find dimmers based on multiple search criteria. For example, you can search for all of the D20AF modules in rack 3 with a specific dimming curve.

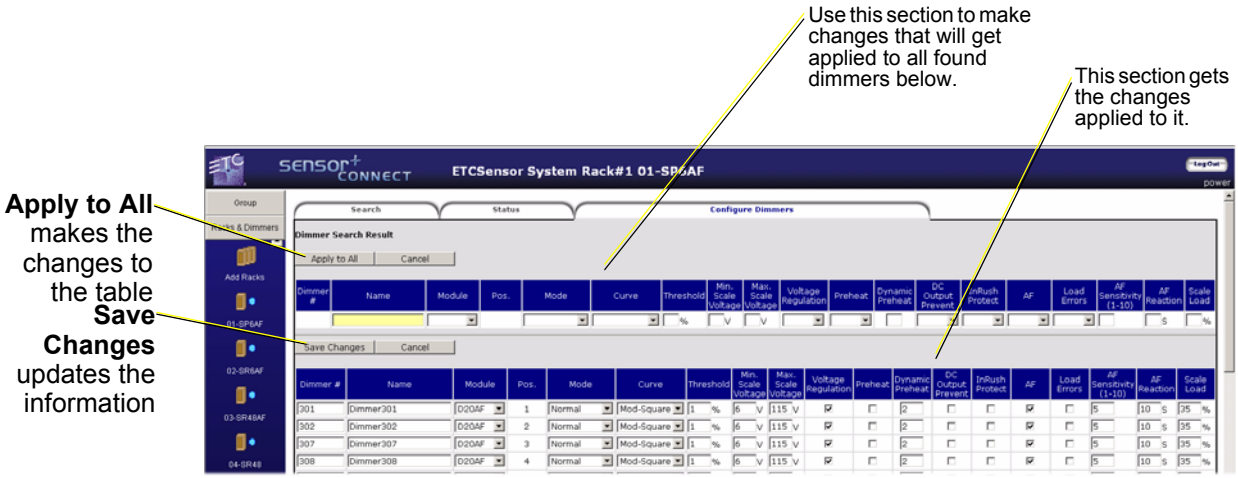
The results of that search are presented on a dimmer status page (the next tab).



Using the Configure Dimmers webpage within the Search function provides an easy way to set one property or properties on the top of the page and have it apply those settings to every found dimmer in the group.

These are the same dimmer properties as explained above. *See "Configure Dimmers" on page 20.*

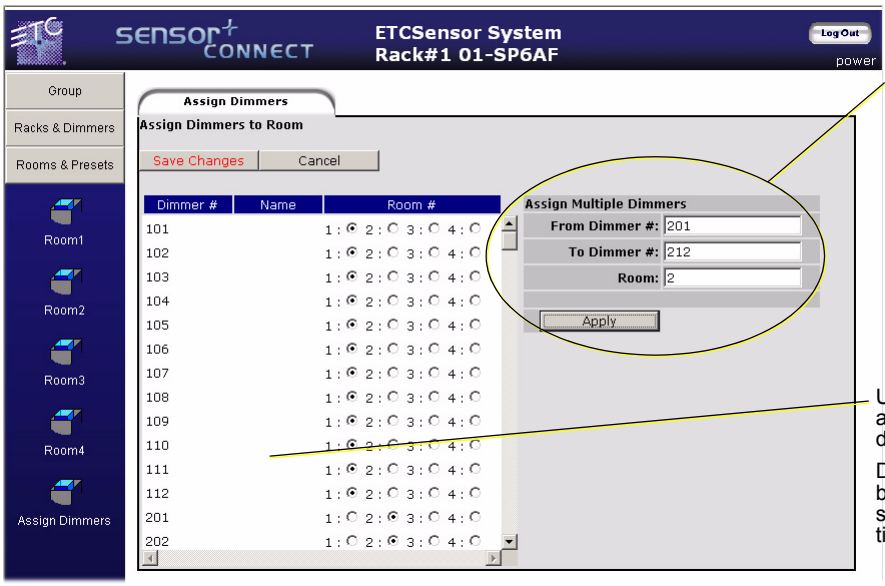
You can also use the **Configure Dimmers** tab to modify the properties of all the found dimmers at once. (See below.)


Use this section to make changes that will get applied to all found dimmers below.
This section gets the changes applied to it.
Apply to All makes the changes to the table
Save Changes updates the information
ETCSensor System Rack#1 01-SP6AF
Search
Status
Configure Dimmers
Dimmer Search Result
Apply to All
Cancel
Save Changes
Cancel

Rooms & Presets

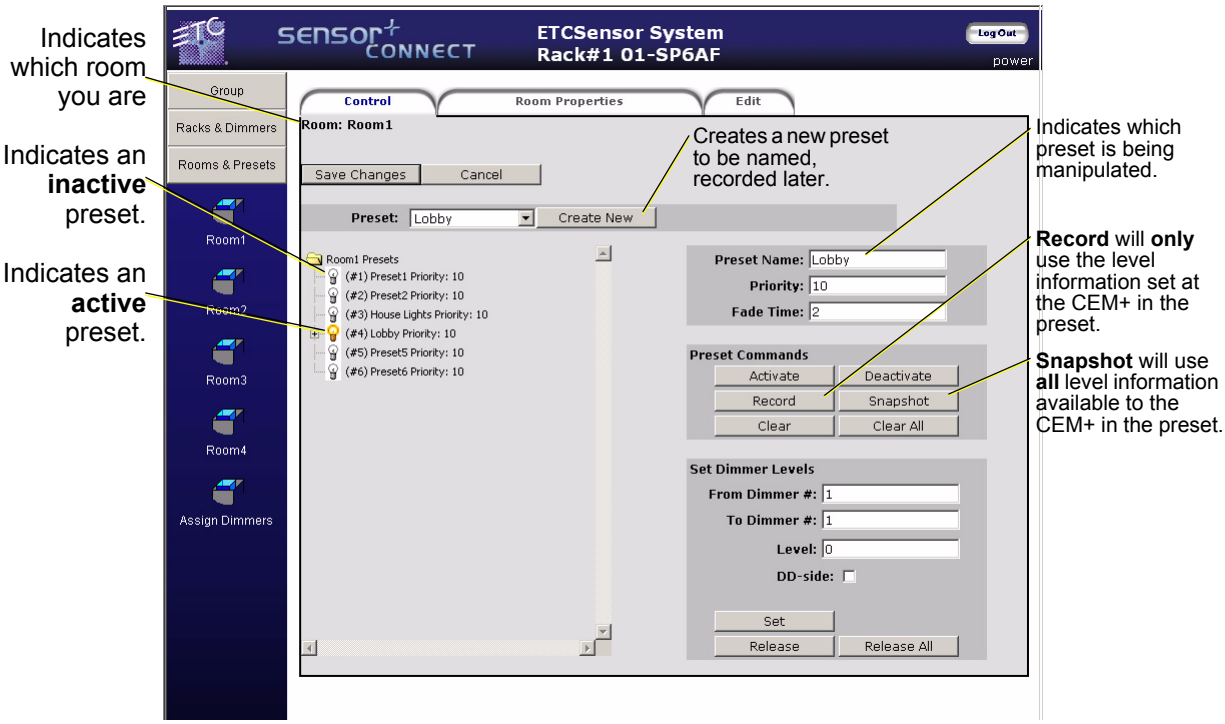
Assign Dimmers

All dimmers in a group default to being in (and thus available only to) Room1. You can assign a dimmer or range of dimmers to any of the rooms (1-4) only once. Shown below, dimmers 101-112 are assigned to Room2 and dimmers 201-212 are assigned to Room2.



Room (1-4)

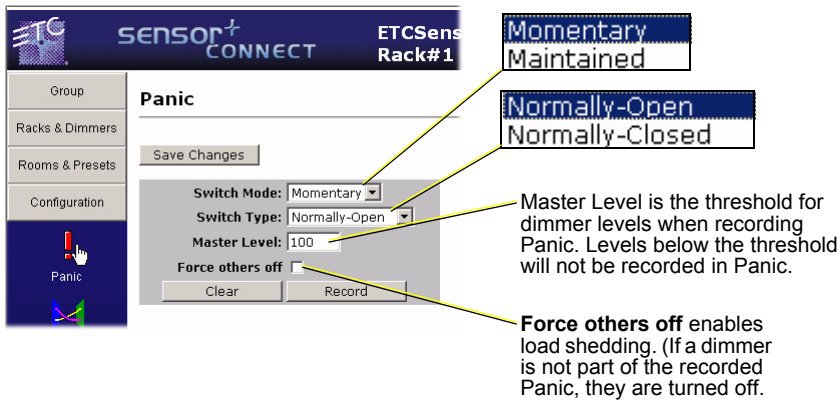
Clicking on a room in the navigation bar will bring up the display shown below. This is where you create presets, name presets, record or snapshot presets to give them level information or clear a preset to remove all level information from it.



Configuration

Panic

This is the page where you configure Panic for switch mode and type as well as record or clear the Panic preset.

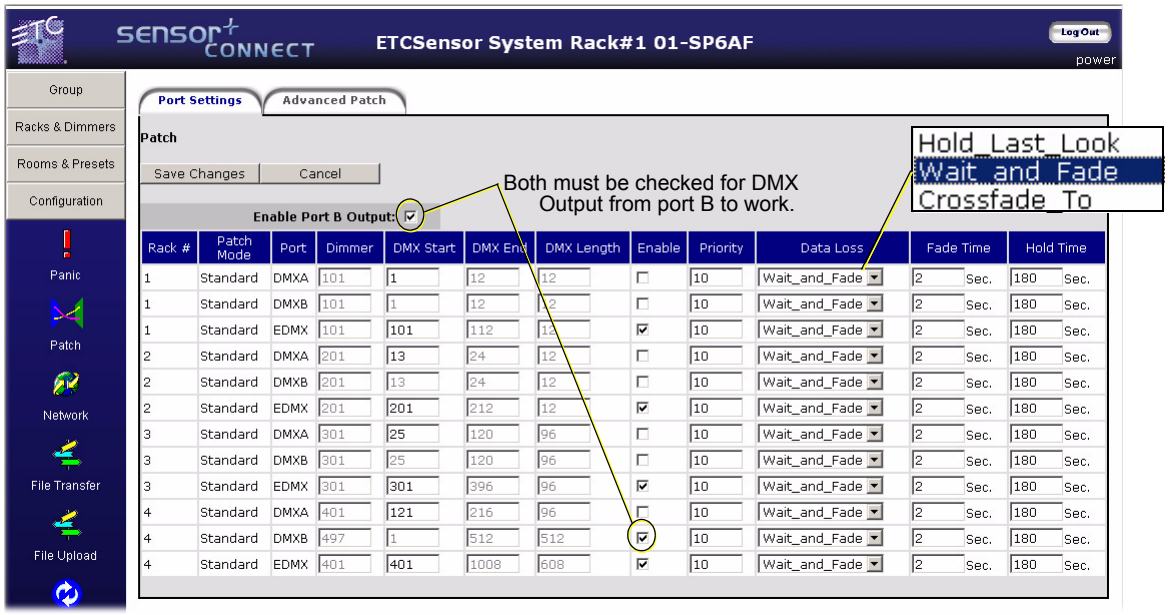


Patch

Port Settings (Standard Patch)

The port settings page is where you can enable/disable any of the data input ports as well

as the port relative priority inside the CEM+, and any port's data loss behavior on any of the Sensor+ racks. Along with the port settings are the standard patch settings. You can assign the starting DMX address for each rack's data port (DMX & EDMX).

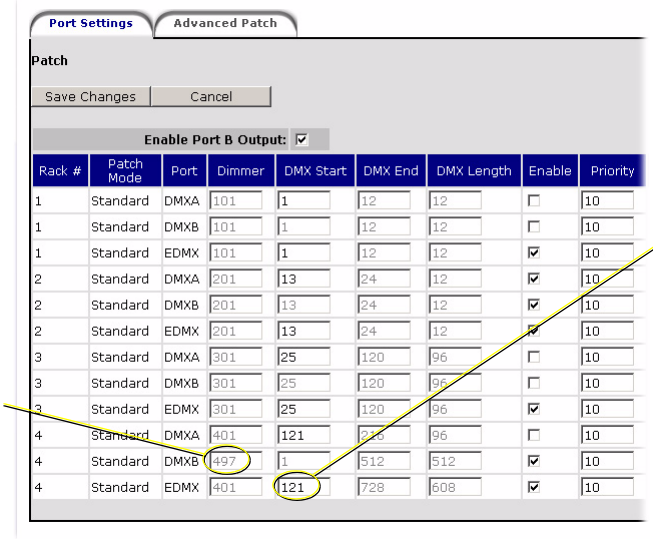

ETCSensor System Rack#1 01-SP6AF
Log Out
power
Group
Racks & Dimmers
Rooms & Presets
Configuration
Panic
Patch
Network
File Transfer
File Upload
Port Settings
Advanced Patch
Patch
Save Changes
Cancel
Enable Port B Output:
Both must be checked for DMX Output from port B to work.
Hold_Last_Look
Wait_and_Fade
Crossfade_To
Rack # | Patch Mode | Port | Dimmer | DMX Start | DMX End | DMX Length | Enable | Priority | Data Loss | Fade Time | Hold Time
1 Standard DMXA 101 1 12 12 10 Wait_and_Fade 2 Sec. 180 Sec.
1 Standard DMXB 101 1 12 12 10 Wait_and_Fade 2 Sec. 180 Sec.
1 Standard EDMX 101 101 112 12 10 Wait_and_Fade 2 Sec. 180 Sec.
2 Standard DMXA 201 13 24 12 10 Wait_and_Fade 2 Sec. 180 Sec.
2 Standard DMXB 201 13 24 12 10 Wait_and_Fade 2 Sec. 180 Sec.
2 Standard EDMX 201 201 212 12 10 Wait_and_Fade 2 Sec. 180 Sec.
3 Standard DMXA 301 25 120 96 10 Wait_and_Fade 2 Sec. 180 Sec.
3 Standard DMXB 301 25 120 96 10 Wait_and_Fade 2 Sec. 180 Sec.
3 Standard EDMX 301 301 396 96 10 Wait_and_Fade 2 Sec. 180 Sec.
4 Standard DMXA 401 121 216 96 10 Wait_and_Fade 2 Sec. 180 Sec.
4 Standard DMXB 497 1 512 512 10 Wait_and_Fade 2 Sec. 180 Sec.
4 Standard EDMX 401 401 1008 608 10 Wait_and_Fade 2 Sec. 180 Sec.

DMX Port B Output is also enabled here. You need to enable **both** the Port B Output and the DMX B port of the last logical rack in the group. DMX Port B Output takes patched EDMX and outputs 512 channels of DMX.

To find the first EDMX address that will be used for the Port B DMX Output, you need to do some math (not much though). In a patch that is not 1-to1, the first EDMX address used is not clearly shown.

Find EDMX Address for Port B DMX Output

For a patch that is not 1-to-1 (like one shown here) This is **not** the EDMX start


Port Settings
Advanced Patch
Patch
Save Changes
Cancel
Enable Port B Output:
Rack # | Patch Mode | Port | Dimmer | DMX Start | DMX End | DMX Length | Enable | Priority
1 Standard DMXA 101 1 12 12 10
1 Standard DMXB 101 1 12 12 10
1 Standard EDMX 101 1 12 12 10
2 Standard DMXA 201 13 24 12 10
2 Standard DMXB 201 13 24 12 10
2 Standard EDMX 201 13 24 12 10
3 Standard DMXA 301 25 120 96 10
3 Standard DMXB 301 25 120 96 10
3 Standard EDMX 301 25 120 96 10
4 Standard DMXA 401 121 96 10
4 Standard DMXB 497 1 512 512 10
4 Standard EDMX 401 121 728 608 10

Find the EDMX starting address by...

Take the EDMX Start for the EDMX port (121)...

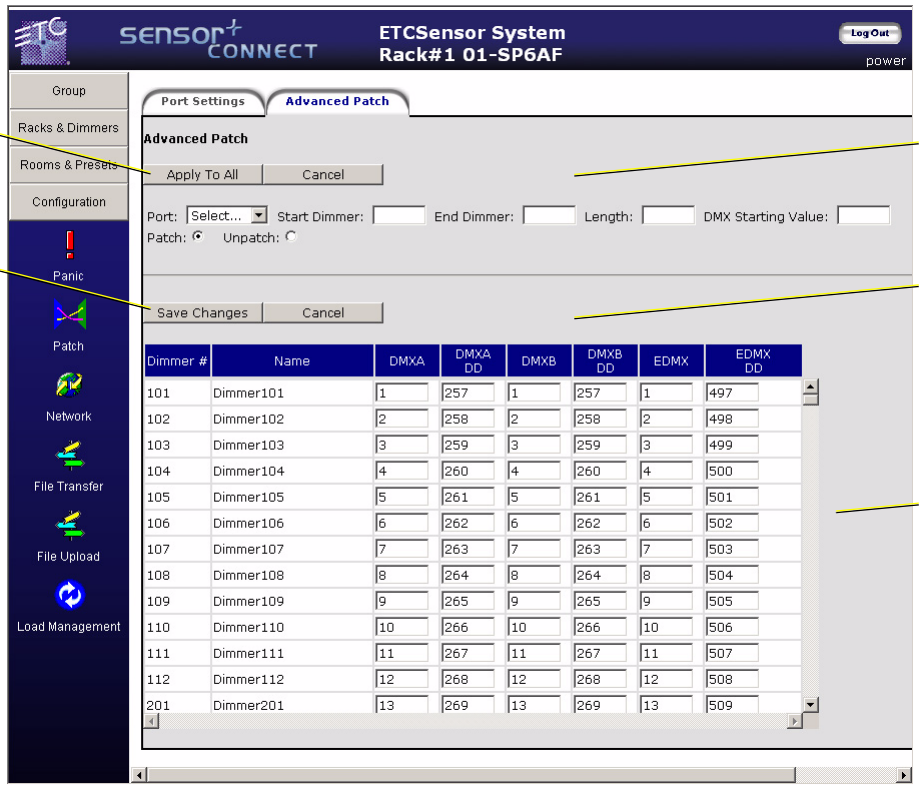
Add the number of dimmers in the last rack (in this case 96)

This means your Port B DMX Output EDMX start Address is **217**. (This also works for 1-to-1 patched groups)

Advanced Patch

Standard Patch and **Advanced Patch** are handled as two completely separate patches including port enables and data loss behaviors. This means that if you configure the ports while in standard patch mode, switching to advanced patch mode will also switch those ports enables and data loss behaviors to a different configuration.

While in Advanced Patch mode, port enable and data loss behavior are still set on the **Port Settings** page.



Apply to All makes the changes to the table

Save Changes updates the information

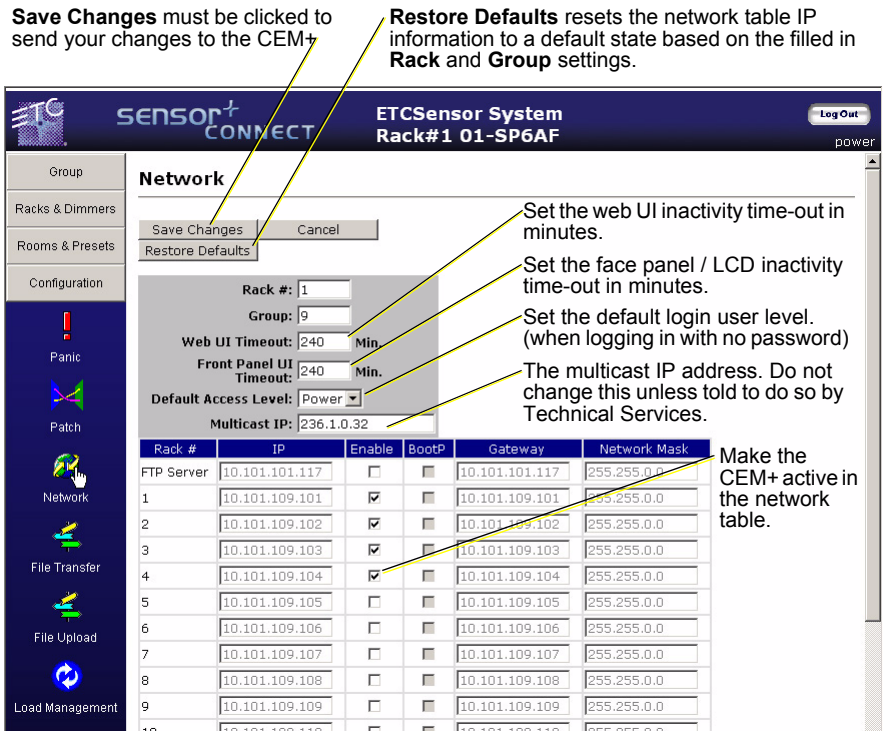
Use this section to do range patching.

Use this section to edit dimmer by dimmer for all ports.

Port enables and data loss behaviors are still made on the Port Settings page.

Network

The Network screen displays the network table for the CEM+. This information is local to the CEM+ and changing IP information here does not change the corresponding CEM+'s actual IP address. It only serves as a place to store and lookup the IP addresses of other CEM+s in the same group. This table does get shared to the other CEM+s in the group.

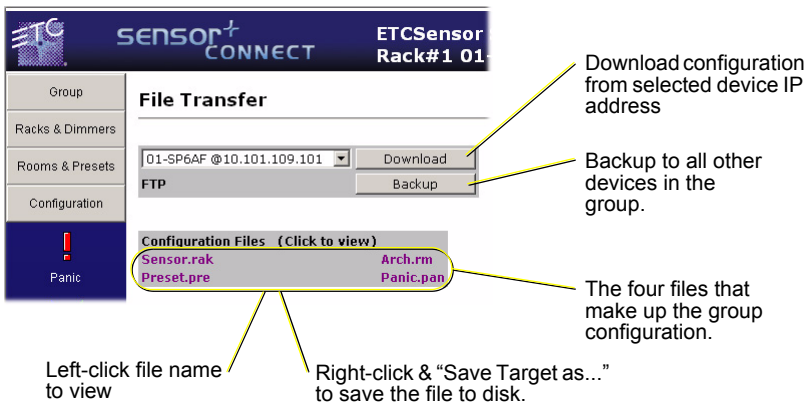

Save Changes must be clicked to send your changes to the CEM+
Restore Defaults resets the network table IP information to a default state based on the filled in **Rack** and **Group** settings.
ETCSensor System
Rack#1 01-SP6AF
Log Out
power
Group
Racks & Dimmers
Rooms & Presets
Configuration
Panic
Patch
Network
File Transfer
File Upload
Load Management
Network
Save Changes
Cancel
Restore Defaults
Rack #: 1
Group: 9
Web UI Timeout: 240 Min.
Front Panel UI Timeout: 240 Min.
Default Access Level: Power
Multicast IP: 236.1.0.32
Set the web UI inactivity time-out in minutes.
Set the face panel / LCD inactivity time-out in minutes.
Set the default login user level. (when logging in with no password)
The multicast IP address. Do not change this unless told to do so by Technical Services.
Make the CEM+ active in the network table.
Rack # | IP | Enable | BootP | Gateway | Network Mask
FTP Server 10.101.101.117 10.101.101.117 255.255.0.0
1 10.101.109.101 10.101.109.101 255.255.0.0
2 10.101.109.102 10.101.109.102 255.255.0.0
3 10.101.109.103 10.101.109.103 255.255.0.0
4 10.101.109.104 10.101.109.104 255.255.0.0
5 10.101.109.105 10.101.109.105 255.255.0.0
6 10.101.109.106 10.101.109.106 255.255.0.0
7 10.101.109.107 10.101.109.107 255.255.0.0
8 10.101.109.108 10.101.109.108 255.255.0.0
9 10.101.109.109 10.101.109.109 255.255.0.0

To change the entire network table at once from the web interface, set the Group and Rack numbers and click **Restore Defaults**. This will repopulate the network table with the default addresses.

Note: *To edit the IP addresses directly from the web interface, you need to contact ETC Technical Services.*

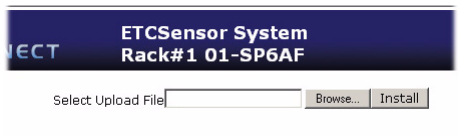
File Transfer

This webpage is used to initiate configuration transfers between the CEM+ module and an FTP server if one is configured and available. Please see the section *"FTP Server", page 43* for more information about setting up an FTP server for use with CEM+.



File Upload

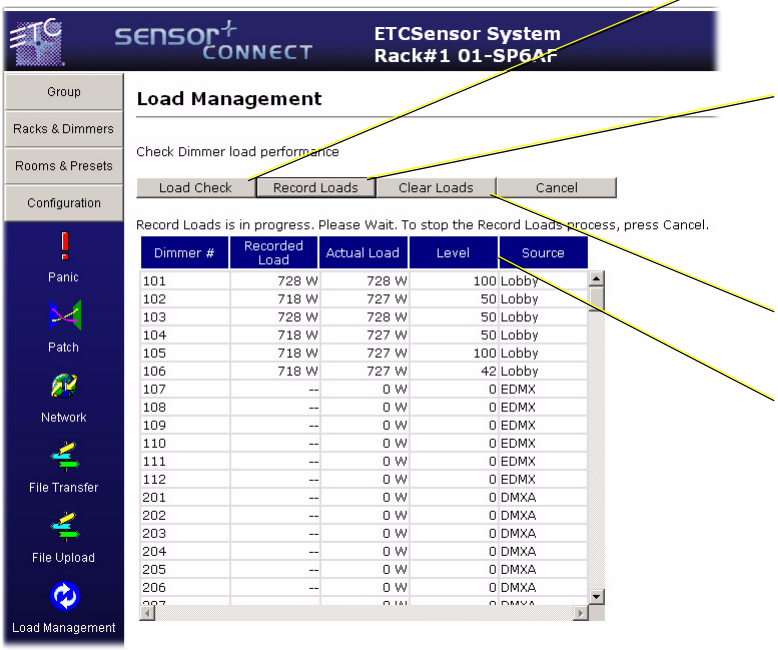
The **File Upload** web page is where you send either a configuration file or a software file to the CEM+ you are logged into. The CEM+ looks at the file being sent to automatically handle the file type or part of the configuration file.



Load Management

From this webpage, you can record, check, and clear load information for Advanced Feature modules (such as the D20AF).

For the functions on this page to work properly, you **must** turn on **Load Errors** for each of the advanced features (AF) dimmer modules you want to use in load management. Please see *"Configure Dimmers", page 20* for more information about enabling load errors for a dimmer.


sensor+ CONNECT
ETCSensor System
Rack#1 01-SP6AF
Group
Racks & Dimmers
Rooms & Presets
Configuration
Panic
Patch
Network
File Transfer
File Upload
Load Management
Load Management
Check Dimmer load performance
Load Check
Record Loads
Clear Loads
Cancel
Record Loads is in progress. Please Wait. To stop the Record Loads process, press Cancel.
Dimmer # | Recorded Load | Actual Load | Level | Source
101 728 W 728 W 100 Lobby
102 718 W 727 W 50 Lobby
103 728 W 728 W 50 Lobby
104 718 W 727 W 50 Lobby
105 718 W 727 W 100 Lobby
106 718 W 727 W 42 Lobby
107 -- 0 W 0 EDMX
108 -- 0 W 0 EDMX
109 -- 0 W 0 EDMX
110 -- 0 W 0 EDMX
111 -- 0 W 0 EDMX
112 -- 0 W 0 EDMX
201 -- 0 W 0 DMXA
202 -- 0 W 0 DMXA
203 -- 0 W 0 DMXA
204 -- 0 W 0 DMXA
205 -- 0 W 0 DMXA
206 -- 0 W 0 DMXA

Performs a **Load Check** by running the levels of dimmers up & down checking for differences between recorded and actual loads.

Record Loads runs the dimmers levels up & down to record the loads.

You **must** turn on (check) **Load Errors** for **Record Loads** to work properly. Just turning on **AF** does not turn on Load Errors by default.

Clear Loads will delete the previously recorded loads.

Level & **Source** display the current dimmer level and the control source for the dimmer.

Shown above, dimmers 101-106 are controlled by the Lobby preset.

Chapter 4
CEM+ Configuration Procedures

CEM+ Configuration Overview

Configuring a CEM+ from either the face panel via the LCD and buttons or the Sensor+ Connect web interface are basically the same procedures done in the same order. The web interface is more intuitive and you are able to make more changes simultaneously; making it a more efficient way to configure the modules.

Please refer to the LCD menu structures and web interface site map for navigation details.

Since there are nearly an infinite number (at least for practical purposes of counting them) of ways for you to configure your racks and dimmers, the procedures in this section are intended to be building blocks for you to use to configure your unique system.

The headings for each procedure will contain either a [**Power**], [**User**] or a [**Guest**] to denote the minimum required access level. [Web] or [FP] will note whether a specific navigation path is for the web interface or the CEM+ face panel.

Configuration Procedures

Configure Your Computer for an ETCNet2 Network

Prior to changing any Network settings on your personal computer please record the current settings in the following spaces below.

IP Address	_____._____._____._____
Subnet Mask	_____._____._____._____
Gateway IP	_____._____._____._____

To use your personal computer on an ETCNet2 network that does not use a network router (i.e. hub and/or switch only), ETC recommends the following default settings:

IP Address	10.101.1.101
Subnet Mask	255.255.0.0
Gateway IP	10.101.1.101

Note: *If you are setting this computer up to be an FTP server, then you should set the IP address to 10.101.101.117 —the default FTP server IP address of CEM+ modules.*

If you have a network that does include a network router, you must set the Gateway IP address to the appropriate port on the router.

Each additional computer on an ETCNet2 network must have it's own IP address which must be different from any other computer on the same ETCNet2 network. Select from the following default range of IP addresses for an additional personal computer on the network:

- 10.101.1.101 thru 10.101.1.249

Browse into a CEM+ from Internet Explorer 6:

Step 1: Open Internet Explorer 6.

Step 2: Type the IP address of the rack you want to browse to in the address box and press RETURN. Sensor+ Connect will open in the browser window if the CEM+ at the entered address is online.

Note: *10.101.101.101 is the default address for a CEM+ in the first rack of the first group. Your system may use a different addressing scheme. If that is the case, simply enter the IP address of one of the racks in the group you want to browse.*

The default IP address scheme for CEM+ follows the two-digit Group and Rack numbers of each module.

- 10.101.1GG.1RR where GG is the two-digit Group number and RR is the two-digit rack number.

To browse into a CEM+ that is in Group 2, Rack 3 (for instance) the default IP address is 10.101.102.103.

Software Changes [Power]

Software changes must be done via the web interface.

Changing the software in a CEM+ is done by uploading a software file to a CEM+. Once the upload is complete, the CEM+ will automatically start the software replacement process.

Once the software replacement begins, the CEM+ will turn off all of its dimmers and stop responding to all level information data.

These steps begin after you have the CEM+ software file on your computer in a known location.

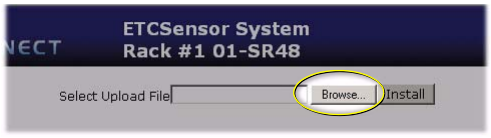
Upload software to a CEM+:

Step 1: Launch Internet Explorer 6 (or later) from a PC and browse to the CEM+ by typing in the IP address of the CEM+

Step 2: Login to the CEM+ at the Power User level (User name: **power** / Password: **powerpass**)

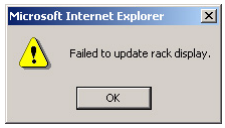
Step 3: Browse to the File Upload page by clicking the Configuration button on the side navigation bar then the File Upload icon.

Step 4: From the File Upload page, click **Browse** and locate the CEM+ software file.



Step 5: Click **Install**.

- After clicking Install, the software will be uploaded to the CEM+. While the software is being sent to the CEM+, the browser will no longer respond. After several minutes, there will be a pair of errors indicating that the CEM+ is done transferring the file and is now installing the software (and no longer communicating with Internet Explorer which is what causes the errors).



Step 6: After seeing the errors, it is safe to clear the errors (click OK) and close Internet Explorer.

- The following screens will be seen on the face panel display during software installation:

Loading New SW Please Wait...	While the software is being downloaded.
Installing Software <various messages>	While the individual components are being decompressed and installed.
CEM+ 1.0.2	While the CEM+ reboots with the new software.
Loading SW For Dimming Processor	While theCEM+ transfers some software to the dimming engine.
Loading SW For AF Card	While the CEM+ transfers some software to the Advanced Features (AF) cards (if installed).
ETC CEM+ R 1/ 4 G 1 [Rack OK]	Installation is complete. The CEM+ returns to its normal resting display.

Step 7: Repeat for any remaining CEM+s in the system.

Delete All Racks [Power]

Step 1: Login as a Power User

Step 2: Delete the config from the local rack (the one you are logged into).

- [Web] Racks & Dimmers>Add Racks>Delete All Racks
- [FP] Rack>Delete All Racks

Step 3: Send the local rack's configuration to the other racks. This will send the "noconfig" configuration to the other CEM+s in the group and effectively delete their configuration as well.

- Configuration>File Transfer>Backup
- [FP] Rack>Send Config to All

This operation clears the rack configuration from the local rack (the one you are logged into), but does not clear everything from the CEM+. The network settings, and custom PIN for the face panel remain intact.

Build New Configuration (from NoConfig State)

This overall procedure is made up of the next several smaller procedures.

When a CEM+ is in the state of “NoConfig”, the face panel menu is different than during normal operation. It changes to options that are centered around getting the CEM+ configured. That menu can be found on the first page of *“Appendix E: CEM+ LCD Menu” on page 60.* From the NoConfig menu at the face panel you can Generate Defaults for that rack with a any user level including Guest.

Configure/Confirm Network Settings of CEM+

The IP address settings of each CEM+ module must point to each other in order for the configuration information to transfer between racks/CEM+s.

The first part of this process is to confirm/set the individual network settings of each CEM+. The easiest way to do this is at the CEM+ face panel.

- [Web] Configuration>Network
- [FP] Setup Network

From the **Set Group / Rack** menu, specify:

- **Group** - Specifies a selection of racks that share a common config and relay preset, panic and level information between themselves. Groups can be numbered from 1 - 64.
- **Rack** - Specifies the number of a rack within the Group. Racks can be numbered from 1-16. All Groups must start with Rack 1.
- **Network Enable** - Makes the specified unit active in the network table.
- **IP address** - Specifies the IP address for the CEM+ you are using (the local CEM+).
- **Subnet Mask** - Specifies the subnet mask for the CEM+ you are using (the local CEM+).
- **Gateway IP** - Specifies the gateway IP address for the CEM+ you are using (the local CEM+).

This must be done for each CEM+ module. It works best if the IP addresses adhere to the default IP address scheme:

- 10.101.1GG.1RR where GG is the two-digit Group number and RR is the two-digit rack number.

Once the racks have all been assigned their group and rack numbers, login to Rack #1 and confirm that the IP addresses that Rack #1 has for each of the other racks matches what was set for each of the previous racks.

To change the entire network table at once from the web interface, set the Group and Rack numbers and click **Restore Defaults**. This will repopulate the network table with the default addresses.

Note: *To edit the IP addresses directly from the web interface, you need to contact ETC Technical Services.*

Add Racks [Power]

Racks can be added individually or multiples of the same rack type and dimmer type. Adding racks is very easy and you are asked for everything needed to create a rack.

However, there are a couple of points you need to be aware of:

- Every Group of racks must have a Rack 1.
- Racks must be added sequentially, starting with rack 1 to a maximum of 16 racks.
- For European rack and module options, set the voltage to **240V**.
  - [FP] This is straightforward in the face panel LCD menu (it's the first setting).
  - [Web] However, the web interface requires that you click the **240V** check box then **Save Changes** before the options will change. The first click of Save Changes after altering the 240V setting will not add another rack (it changes the options), the next click of Save Changes will add the specified rack(s).
- Rack Types: **SRxx** is an permanent installation rack and **SPxx** is any type of portable rack (including touring racks). **ESRxx** and **ESPxx** are for European installation rack and portable racks respectively. In all cases, the "xx" number is determined by the number of slots in the rack for modules (***not*** the number of dimmers).

Set Patch Mode

Standard Patch and **Advanced Patch** are handled as two completely separate patches including port enables and data loss behaviors. This means that if you configure the ports while in standard patch mode, switching to advanced patch mode will also switch those ports enables and data loss behaviors to a different configuration.

Port Settings (Standard Patch)

Standard patch gives every port on every rack a starting address and sequentially addresses the rest of the dimmers in the rack from that point. To edit the dimmer's addressing individually, you need to switch the patch mode of the rack to **Advanced**.

By default every rack added will be set to an incremental DMX address starting at one (1) and continuing with the next available DMX channel available with only port A enabled on each rack (Port B and EDMX are disabled by default).

You can edit the DMX start channel for each rack from the **Patch/Port Settings** page. You can enable/disable the data ports here as well.

Note: *To output DMX from port B of the last rack BOTH the checkbox for "Enable Port B Output" and the checkbox to enable port B on the last rack must be checked for this to work.*

***Port B DMX Output** is only available from the last logical rack in a group, regardless of its physical position within the group.*

This is also where you set the data priority and data loss behavior for each port of each rack. **Priority** is the preference given to each control source internally to the CEM+ (it is not broadcast to other ETCNet2 devices, nor does it use the source device's priority once inside the CEM+) Priorities can be set for each port of each rack as well as recorded **Presets**. **Data Loss Behavior** tells the port what you want to happen when data is no longer being received on that port.

CAUTION: *An EDMX port will not currently go into a specified data loss behavior. If all EDMX is lost, the dimmers will maintain the last known level until they have new level information to use.*

Advanced Patch

Advanced Patch mode gives you direct dimmer to address patching for each port of each rack with advanced patch enabled. Port enable, priority and data loss behavior are still set from the Port Settings webpage. Dimmer Doubled addresses are always shown in

advanced patch mode, however dimmers are not actually in dimmer doubling mode unless they are set with a Dimmer Double firing mode.

It's worth restating, that **Standard Patch** and **Advanced Patch** are handled as two completely separate patches including port enables, priorities and data loss behaviors. This means that if you configure the ports while in standard patch mode, switching to advanced patch mode will also switch those ports enables and data loss behaviors to a different configuration.

Set Dimmer Properties

When a rack initially gets defined, it contains the default dimmer type with default properties throughout the rack. If you have a mix of dimmer types in a rack, you need to configure those after the racks have been added to the group.

You can either edit the dimmer properties (dimmer type, fire mode, voltage regulation...) individually, or by searching for dimmers by several criteria and edit those found dimmers at the same time.

For specific dimmer configurations:

Switched

Change the firing mode to **Switched** and click **Save Changes**. After saving changes, the remaining dimmer properties will change automatically or can now be set to your desired values. Currently when Switched firing mode is selected, all other properties for that dimmer are ignored.

Property	120V	230V
Firing Mode	Switched	Switched
Curve	Linear	Linear
Threshold	1%	1%
Min. Scale Voltage	140V	265V
Max. Scale Voltage	140V	265V
Voltage Regulation	Unchecked	Unchecked
Preheat	Unchecked	Unchecked
Dynamic Preheat	0 sec.	0 sec.
DC Output Prevent	Unchecked	Unchecked
InRush Protect	Unchecked	Unchecked

Non-Dim

Change the firing mode to **Normal** and click **Save Changes**. After saving changes, make the remaining changes to the dimmer properties as listed below. Currently, setting the firing

mode to **Switched** and turning on Voltage Regulation does not work.

Property	120V	230V
Firing Mode	Normal	Normal
Curve	Linear	Linear
Threshold	1% or desired setting	1% or desired setting
Min. Scale Voltage	115V or desired setting	265V
Max. Scale Voltage	115V or desired setting	265V
Voltage Regulation	Checked	Checked
Preheat	Unchecked	Unchecked
Dynamic Preheat	0 sec.	0 sec.
DC Output Prevent	Unchecked	Unchecked
InRush Protect	Unchecked	Unchecked

Fluorescent

Change the firing mode to **Fluorescent** and click **Save Changes**. After saving changes, the remaining dimmer properties will change automatically or can now be set to your desired values.

Property	120V	230V
Firing Mode	Fluorescent	Fluorescent
Curve	Linear	Linear
Threshold	1% or desired setting	1% or desired setting
Min. Scale Voltage	56V or desired setting	56V or desired setting
Max. Scale Voltage	120V or desired setting	240V or desired setting
Voltage Regulation	Checked	Checked
Preheat	Unchecked	Unchecked
Dynamic Preheat	0 sec.	0 sec.
DC Output Prevent	Checked	Checked
InRush Protect	Unchecked	Unchecked

Dimmer Doubling™

Change the firing mode to **DimDbl** and click **Save Changes**. After saving changes, the remaining dimmer properties will change automatically or can now be set to your desired

values. Dimmer Doubling is only available for 120V systems.

Property	120V	230V
Firing Mode	DimDbl	---
Curve	Mod-Square	---
Threshold	1%	---
Min. Scale Voltage	6V	---
Max. Scale Voltage	115V	---
Voltage Regulation	Checked	---
Preheat	Unchecked	---
Dynamic Preheat	0 sec.	---
DC Output Prevent	Checked	---
InRush Protect	Unchecked	---

Currently, **Dimmer Doubling** works in **Advanced Patch** mode only. To configure a dimmer for Dimmer Doubling:

Step 1: Set the rack that contains the dimmer to **Advanced Patch** mode.

Step 2: Set the dimmer's firing mode to **DimDbl**.

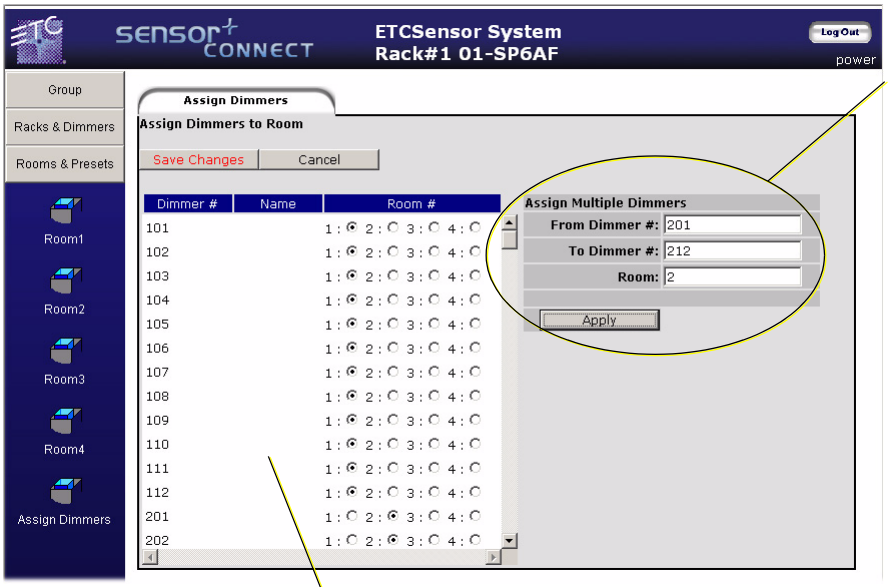
Step 3: Re-configure your port settings and data loss behavior for that rack if they were modified from the defaults.

Step 4: Use advanced patch to patch your dimmers.

- You may need to re-patch all of the dimmers if you are not using the default patch.
- You will need to patch the Dimmer Doubled side of the dimmer for each port you are using (DMXA DD, DMXB DD, EDMX DD).

Assign Dimmers to Rooms

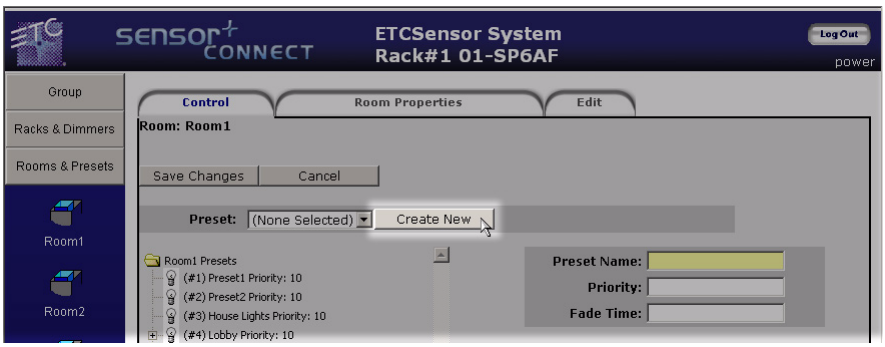
All dimmers in a group default to being in (and thus available only to) Room1. You can assign a dimmer or range of dimmers to any of the rooms (1-4), but to only one room at a time. Shown below, dimmers 101-112 are assigned to Room1 and dimmers 221-212 are assigned to Room2.



Create a Preset (Web Only)

In the web interface, you must create a preset before you can record levels into it. The face panel LCD combines creating a preset with recording it.

Click on **Create New** and the web interface will add a new preset to the list below. It will add an incremental preset (Preset1, Preset2, Preset3 and so on) or if an older preset was recorded, it will recycle the old preset first before making a new one. Once it appears in the list, you can record and modify it as needed.



Record vs. Snapshot a Preset

Record and **Snapshot** are two different operations.

Record will only use level information from Set Levels from the CEM+ modules in the group when storing a preset.

Snapshot will use level information from all available sources to the CEM+ modules (DMXA, DMXB, EDMX, and Set Levels) when storing a preset.

Activate/Deactivate a Preset

You can toggle any preset on or off from either the web interface or the face panel LCD. Stations are currently not supported and therefore can not be used to turn presets on or off.

Max Active Presets

Maximum Active Presets defines how many presets can be active in any one given room at a time. It can be set from a minimum of one (1) and to a maximum of four (4) at a time. Activating one preset more than allowable by **Max Active Presets** will deactivate the active preset with the lowest priority or if all active presets are at the same priority, the oldest previously activated priority.

Max Active Presets defaults to one (1) which results in a “last action” activation/ deactivation manner. (Turning on one preset turns off the previous preset.)

Panic

Panic is configurable for different external switch action types (maintained vs. momentary) and switch resting states (normally-open vs. normally-closed). Panic always operates at the highest priority in the CEM+ and no other control source can pile-on with it or override it.

Record Panic

Create the desired panic look by setting dimmer levels from the CEM+ or from a external control source. Keep in mind that the **Master Level** acts as an intensity threshold for dimmers and determines whether or not they are included in the panic. Only dimmers with an intensity level equal to or greater than the Master Level will be included in Panic. When Panic is active, the dimmers will also playback at the set Master Level.

Set the Panic **Master Level** to your desired level (80% to 100%).

Enable **Force Others Off** if you want load shedding to occur when Panic becomes active. What this means is when Panic becomes active, any dimmers that are not included in Panic will be turned off.

Lastly, record Panic.

Activate Panic

Panic can be activated via an external switch closure or locally via the face panel LCD menu. It cannot be activated/deactivated via the web interface. Deactivation is also done by a switch closure (or lack of one, depending on the switch action type) or locally via the face panel LCD menu.

Load Management

Load management can be used after your system is setup and your loads (lights) are connected to dimmers. For load management to work properly, **Load Errors** must be enabled for each dimmer you want to monitor. **Load Errors** is not enabled on any dimmers by default.

Record Loads

When you record loads, the CEM+ steps through a series of dimmer intensities and monitors the wattage as it proceeds. **Only dimmers that have an initial intensity level greater than zero (0) are included in the process.**

Once loads have been recorded, load changes and missing loads are reported at the face panel LCD menu and in the web interface.

Clear Loads (Web Only)

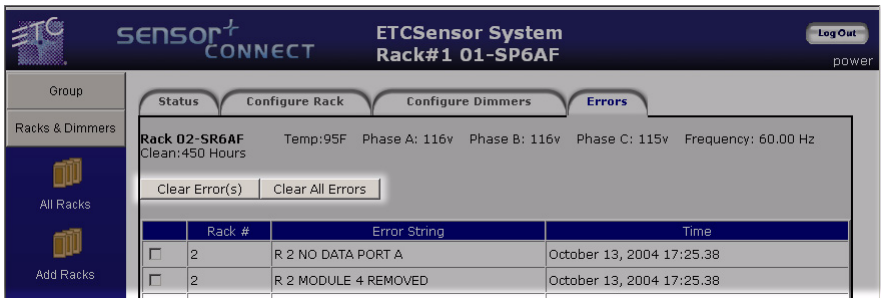
Clearing loads will clear all previously recorded loads. Clearing loads is only available via the web interface.

Clear Errors

Errors will appear on both the face panel LCD and in the web interface.

When viewing errors on the face panel LCD at an access level of **User** or higher, pressing ⊘ will clear that error. Continuing to press ⊘ will cycle through the remaining errors and clear any that are capable of being cleared. Errors that are still current will quickly reappear in the list (such as No Data Port B or Module Removed).

From the web interface, you can view the errors present from a couple of locations, however you can only clear errors from the individual rack's errors tab webpage. From this page you will have the option to checkmark and clear individual errors or to clear all errors.



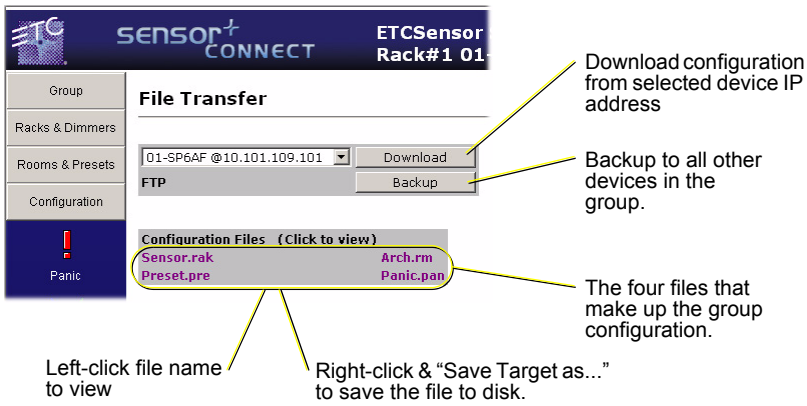
File Transfers

The configuration files that are shared from CEM+ to CEM+ in a group are XML files that are sent and received via FTP (File Transfer Protocol). They are then parsed at each CEM+ for use locally within that CEM+ depending on the rack number (the CEM+ knows what rack number it is and looks to that part of the configuration to get it's settings).

There are four (4) separate files that make up the user-defined configuration.

- **Sensor.rak** - Contains all of the rack configurations and dimmer information including the patch.
- **Preset.pre** - Contains the preset information for the group.
- **Arch.rm** - Contains the room/dimmer assignments for the group.
- **Panic.pan** - Contains the settings for Panic within the group.

Understanding these few pieces of information first makes the rest of this section easier to use and understand.



Download (config from selected IP)

This function will make the local CEM+ (the one you are logged into) get the group configuration (all of the racks configurations in one) from the specified device and IP address in the pull-down menu. The configuration will go from the specified device to only the one device asking for the configuration.

This is useful to get an existing configuration into a new or replacement CEM+.

Backup (to all)

This function will send the local CEM+'s group configuration to all other devices (CEM+s and FTP if one is configured) in the group as set in the network table.

This is useful to send a newly uploaded/modified configuration to the other CEM+s in the group.

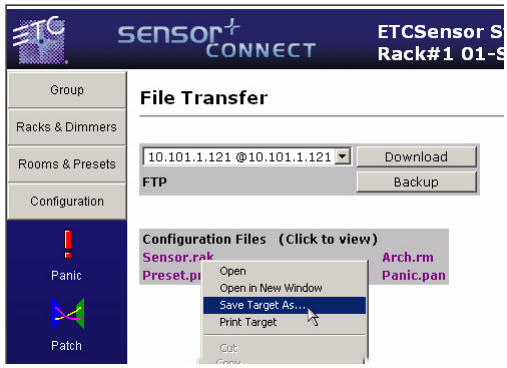
View a Configuration

To view a configuration file's raw XML content on screen, just left-click on the configuration file name you want to see. Once you are viewing the configuration, click back in your browser to get back to the **File Transfer** page. (You can not make any edits to the configuration file while viewing it like this.)

Below is what the **sensor.rak** file looks like viewed in this manner.

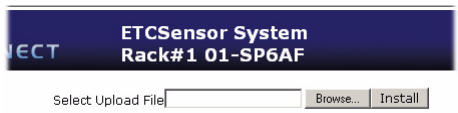
Download a Configuration

To download a configuration file to disk, just right-click on the file name and select “Save Target As...”. This will bring up a standard dialog box asking you to name the file and to pick a location to save it. It will append the file name with “.xml” instead of the file extension listed on the web page. This will not prevent you from uploading the configuration file to a CEM+ later.



Upload a Configuration

Browse to the **File Upload** web page and click **Browse** to select a file to upload to the local CEM+. Once the file is selected, click Install and the file will begin to transfer to the CEM+. This is the same place and manner to send either a configuration file or a software file. The CEM+ looks at the file being sent to automatically handle the file type or part of the configuration file. In the same way, it doesn’t matter if the file ends with .rak or .xml when it is sent.



FTP Server

An FTP server can be configured to be on the ETCNet2 network and act as a file storage location for the configuration files of the group.

An FTP server is not provided as standard with a CEM+.

CEM+ modules can access any stock FTP server that is configured with the following minimum settings:

- IP address of the FTP server needs to match the one specified in the network table in the configuration.
- The CEM+ uses an authenticated login so the FTP server must have a user created and configured for the CEM+. (The user name and password are usually case-sensitive.)
  - User name: **etc**
  - Password: **sensor**
- The FTP server must have a specified default file storage location. The CEM+ does not specify any path to write the file to on the server. They will only go in the default root directory.

WARNING: ***By default, you cannot currently use an FTP server with more than one (1) group of CEM+s at the same time. All CEM+s will send their configurations to the FTP server with the same file names and the same directory (root) and will overwrite other configuration files present.***

Contact ETC Technical Services if this is a requirement of your system.

Chapter 5
Service

Contacting ETC about Equipment Problems

If you are having difficulties, your most convenient resources are provided in this user manual. To search more widely, try the ETC website at www.etcconnect.com. If none of these resources is sufficient, contact ETC Technical Services directly at one of the offices identified below.

If possible, please have this information available before contacting ETC about an equipment problem:

- Your location and job name
- Any error messages on the CEM+ status LCD display
- Related system problems or equipment failures

Americas

Electronic Theatre Controls Inc.
Technical Services Department
3031 Pleasant View Road
Middleton, WI 53562
800-775-4382 (USA, toll-free)
+1-608 831-4116
service@etcconnect.com

United Kingdom

Electronic Theatre Controls Ltd.
Technical Services Department
5 Victoria Industrial Estate
Victoria Road,
London W3 6UU England
+44 (0)20 8896 1000
service@etceurope.com

Asia

Electronic Theatre Controls Asia, Ltd.
Technical Services Department
Room 605-606
Tower III, Enterprise Square
9 Sheung Yuet Road
Kowloon Bay, Kowloon, Hong Kong
+852 2799 1220
service@etcasia.com

Germany

Electronic Theatre Controls GmbH
Technical Services Department
Ohmstrasse 3
83607 Holzkirchen, Germany
+49 (80 24) 47 00-0
techserv-hoki@etcconnect.com

Note: *For the best service results, always tell your service representative you are using the CEM+ version of Sensor dimming system.*

WARNING: ***RISK OF ELECTRIC SHOCK! Servicing Sensor CEM+ dimming equipment exposes high amperage power connections inside the rack. If possible, always turn off power at the main circuit breaker before servicing your system.***

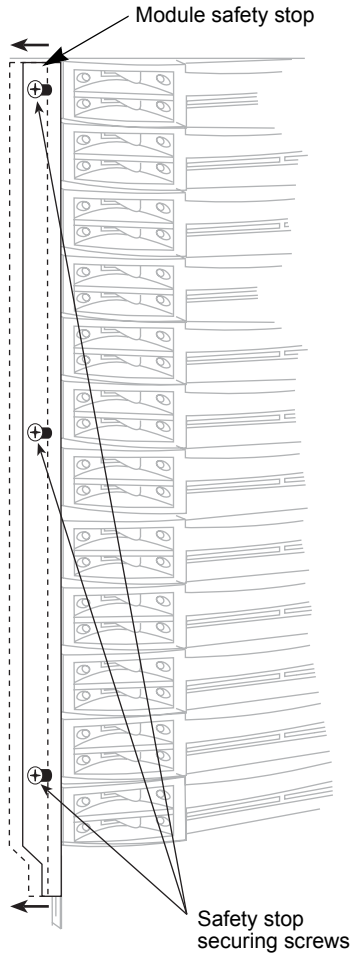
Changing Installation Rack Modules

All Sensor+ rack dimmer modules can be easily replaced without tools. Modules slide in and out of their slots and are ready to start dimming immediately.

Although Sensor modules, including the CEM+, can be replaced with power on, always turn rack power off at the main circuit breaker, if possible, before changing modules.

Releasing and Securing Module Safety Stops (ESR Racks Only)

To prevent unauthorized access to rack modules and interior wiring, Sensor+ CE Installation Racks (ESR) are provided with module safety stops that hold modules in place until released by a service technician.



Step 1: Turn off rack power at the main breaker.

Step 2: Open the rack door. The safety stops are along the left side of the dimmer modules. See the illustration.

- To release the safety stop, loosen the three safety stop securing screws and slide the stop to the left to release the modules. It is not necessary to remove the stop.
- To secure the safety stop, slide it back to the right and tighten the three safety stop screws.

Step 3: Follow the appropriate instructions below to remove or replace the desired dimmer or control modules.

CAUTION: *Operating a dimmer rack with open module slots disrupts airflow inside the rack, which can lead to rack overheating and subsequent rack shutdown.*

Remove and Replace a Dimmer or Airflow Module:

Step 1: Turn off rack power at the main breaker, if possible.

Step 2: Open the rack door.

Step 3: Switch the dimmer module's circuit breaker(s) to the "off" position (breaker to the right).

- Please see *Releasing and Securing Module Safety Stops (ESR Racks Only)* above if appropriate.

Step 4: Grasp the dimmer module by the center of the main air vent.

Step 5: Pull the dimmer straight out.

Step 6: Ensure the circuit breaker(s) on the replacement module are in the "off" position.

Step 7: Insert the replacement dimmer or airflow module into the correct slot and firmly press the module into the slot until you feel the connections seat (the module face will be flush with the other modules).

Step 8: Switch the module's circuit breaker(s) to the "on" position (to the left).

Step 9: Close and lock the Sensor rack door before applying power.

Remove a CEM+ Module:

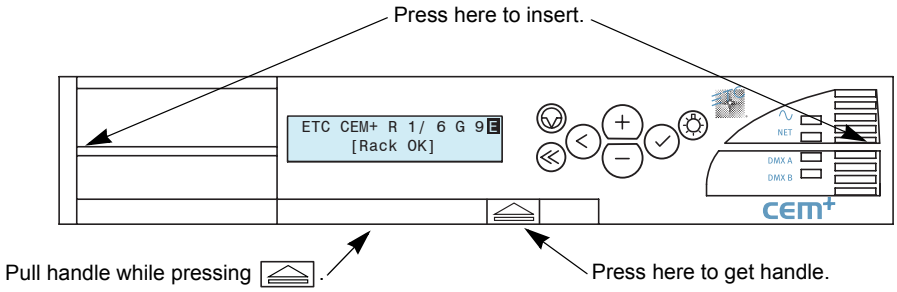
Step 1: Turn off rack power at the main breaker.

Step 2: Open the rack door.

- Please see *Releasing and Securing Module Safety Stops (ESR Racks Only)* above if appropriate.

Step 3: Press the “eject” symbol on the right end of the spring-loaded handle and grab the other end of the handle, pulling it until it is perpendicular to the face of the CEM+. The CEM+ will be gently pushed out of the rack as you move the handle.

Step 4: Pull the CEM+ straight out.



Replace a CEM+ Module:

Step 1: Firmly press the new CEM+ module into the correct slot by pressing on the outside edges until you feel the connections seat (the module face will be flush with the other modules).

WARNING: ***Do not press on the center of the CEM+ to insert it into a rack. Doing so may result in damage to the CEM+.***

Step 2: Close and lock the Sensor rack door before applying power.

Step 3: *ONLY* if directed to do so by an ETC-authorized service representative, transfer the configuration files/information to your new CEM+.

CEM+ Fuses

The CEM+ has two fuses:

- The F1 fuse is a 250V, 0.75 amp, fuse. CEM+ operating power and power for the dimmer module electronics, is drawn through this fuse. If F1 fails, the CEM+ will not operate and dimming will not work. The Sensor+ rack beacon will be dark. The fuse in the F2 position is a spare 0.75 amp fuse.
- Phase F3 fuse is a 250V, 5 amp fuse. Power for the rack's fan is drawn through this fuse. If F3 fails, the fan will stop running and the CEM+ will display an air flow error. The Sensor+ rack beacon will flash to signal a problem. The rack may shut down due to overheating. The fuse in the F4 position is a spare 5 amp fuse.

Replacing a Fuse:

Step 1: Remove the CEM+ module (See *Changing Installation Rack Modules, page 45*).

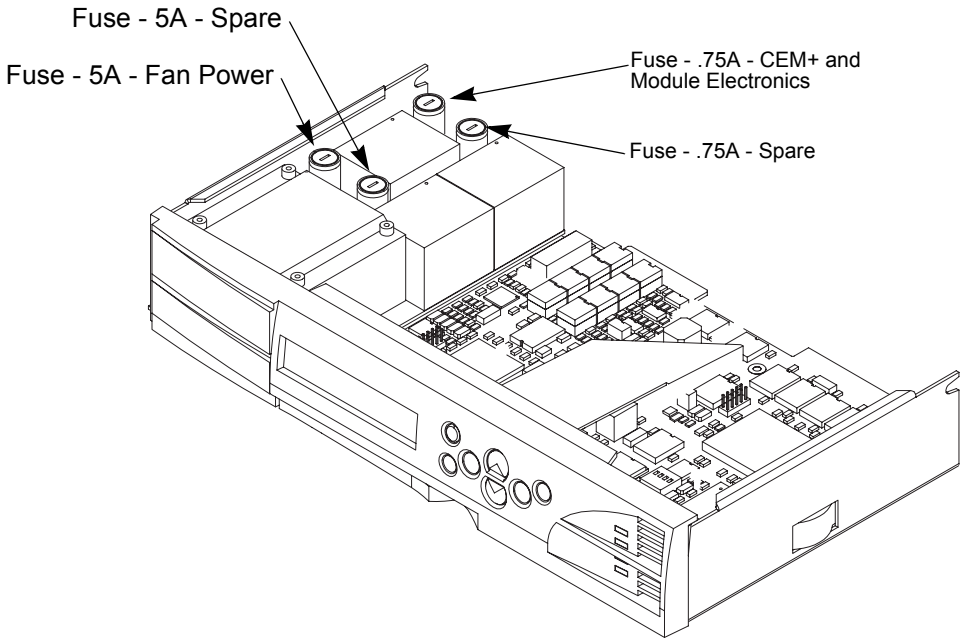
Step 2: Locate and replace the defective fuse. Fuses are held in vertical fuse holders.

a: Use a slotted screwdriver to gently turn the cap of the fuse holder to the left until it comes free.

b: Lift the cap and the fuse straight out of the fuse holder.

c: Remove the defective fuse and replace it with a fuse of the same type. A spare fuse of each type is provided on the CEM+.

d: Replace the fuse and cap in the fuse holder and use a slotted screwdriver to gently turn the cap to the right to fully capture the fuse.



Step 3: Replace the CEM+ module and close the door.

Troubleshooting

Your Sensor+ system helps you identify system problems with status reporting and diagnostic testing capabilities.

You will usually notice a system problem in one of two ways:

- The Sensor+ beacon on the dimmer rack begins blinking, indicating the CEM+ has detected a problem. The system may still continue to dim normally.
- You notice a problem with system performance. The beacon may be flashing, or the problem may be caused by another part of your lighting control system.

When either of these situations occur, you can follow these steps to isolate and correct the cause.

Make a Preliminary Examination of Your System...

- ❑ Check the CEM+ display, Sensor+ Connect or WYSILink for error messages. For an explanation of error message causes and possible corrections, see *CEM+ Error Messages, page 50*.

If lights are stuck on...

- ❑ Check for an activated Preset at your CEM+. (This can lock some or all of your dimmer circuits at one level.)
- ❑ Make sure your Panic circuit is not activated. (This will drive some of your dimmer circuits to full and hold them there.)
- ❑ Make sure all direct dimmer levels at the CEM+ are cleared. (This can lock some or all of your dimmer circuits at one level.)

If lights won't come on...

- ❑ Look for obstructions on top or in front of your installation rack that may be blocking rack ventilation.
- ❑ Open the door and look for dust buildup on the air filter or rack modules.
- ❑ Check for tripped dimmer module circuit breakers.
- ❑ Check for tripped breakers on your main circuit breaker panel.
- ❑ Check for loose or damaged control cables coming into your dimmer rack.
- ❑ Check to see in Panic is activated (circuits set to load-shed will not come on).
- ❑ EDMX sources with a higher priority and a level of zero will override other lower priority levels.

When you think you've found the problem...

- ❑ Correct any of these problems you find, press the reset button on the front of the CEM+ module and observe the system to see if the problem still exists.

If You Cannot Locate or Correct the Problem...

If you are unable to eliminate the problem, contact your authorized ETC representative.

See *Contacting ETC about Equipment Problems, page 44*, for procedures on contacting ETC for technical help.

Appendix A
CEM+ Error Messages

If the CEM+ detects an error, it will flash the beacon and display the appropriate error message on the LCD display. A CEM+ will only display error messages for the same rack it is in - you can't browse to other racks to view their errors from a single CEM+.

Errors are also displayed in the WYSILink Message Log on Emphasis Control Systems and WYSILink PCs on the network. You can also view rack error messages in the Sensor+ Connect interface on Emphasis Control Systems or by browsing into a CEM+ using Internet Explorer 6 on a PC on the network.

View error messages on the CEM+ LCD display:

Step 1: Open the door of the rack with the blinking beacon. The CEM+ will display the message [Rack Errors].

Step 2: Press ✓ to enter the error list. The number of errors and which error is currently displayed of that number are displayed at the top of the display.

Step 3: Press + and − to increment and decrement through the list, if necessary.

CEM+ Error Message	Probable Cause	Possible Corrective Action
AMBIENT OVERTEMP	Ambient temperature is higher than 115°F (46°C).	Lower dimmer room temperature.
AMBIENT TEMP HIGH	Ambient temperature is higher than 104°F (40°C).	Lower dimmer room temperature.
AMBIENT TEMP LOW	Ambient temperature is lower than 32°F (0°C).	Raise dimmer room temperature.
DIMMER ERROR	A dimmer in this rack has an error.	Use About Dimmer to check the specific error.
DATA ERROR PORT (A or B)	DMX512 data error	Check DMX512 port input cable and termination.
FREQUENCY ERROR	Feed power is not 50 or 60Hz. (±2.5Hz)	Check input frequency.
NO AIRFLOW	Insufficient airflow detected.	Check fan and air filter for obstruction.
NO DATA PORT (A or B)	No DMX512 data has been received by Port (A or B).	Check DMX512 source devices and input cables.
MODULE __ OVERTEMP	Dimmer module has overheated and shut down.	Check airflow
PHASE (A, B or C) OFF	No voltage on phase (A, B or C).	Check line feed.
PHASE DETECT FAIL	CEM+ could not read the line feed phasing.	Re-seat the CEM+ and try again. If problem persists, replace the CEM+.
TEMP SENSOR STUCK	Ambient temperature sensor is stuck.	Replace CEM+.
ZERO CROSS ERROR	CEM+ hardware failure.	Replace CEM+.
SOFTWARE ERROR	CEM+ units running different versions of software are on the same network.	Install the same version of software on all CEM+ units.
PHASE (A, B or C) VOLTS HIGH	Voltage on phase (A, B or C) is higher than 140Vac.	Check line feed.

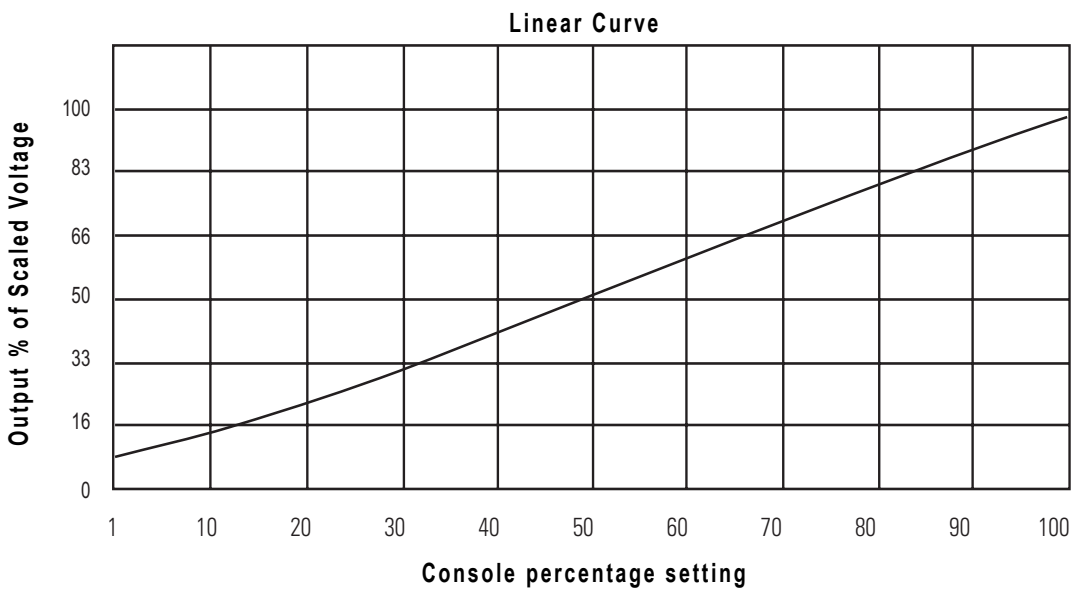
CEM+ Error Message	Probable Cause	Possible Corrective Action
PHASE (A, B or C) VOLTS LOW	Voltage on phase (A, B or C) is lower than 80Vac.	Check line feed.
LOW AIRFLOW	Airflow is low.	Check fans and air filter for obstruction.
CLEAN YOUR FILTER	This is a reminder to clean your air filter. It appears when the “Clean Time” clock has counted down to zero.	Reset the “Clean Time” counter to the number of hours you want between filter cleaning.
PHASE (A, B or C) HEADROOM	Incoming line voltage on phase (A, B or C) has dipped below the configuration-defined Headroom level.	Reduce the load on the indicated phase through repatching or lowering output levels of associated dimmers.
CONFIG MISMATCH __	Configuration error.	Transfer configuration data from another rack.
BREAKER __ TRIP	The circuit breaker on dimmer ___ has tripped.	Check circuit for cause of circuit breaker trip, such as too many lamps on the dimmer, or bad cabling.
SCR __ STUCK ON	The SCR in dimmer ___ has failed on.	Replace dimmer module.
SCR __ STUCK OFF	The SCR in dimmer ___ has failed off.	Replace dimmer module.
RCD __ TRIP	The RCD in ___ has failed tripped.	Replace RCD module.
MODULE __ REMOVED	Module has been removed from the rack.	Reinsert or replace module.
LOAD __ CHANGE HIGH	Load is currently higher than the recorded load for this dimmer.	Rerecord the load, or check for additional or higher wattage lamp(s) on the circuit.
LOAD __ CHANGE LOW	Load is currently lower than the recorded load for this dimmer.	Rerecord the load, or check for missing or burned-out lamp(s) on the circuit.
LOAD __ NO LOAD	A load is recorded, but there is currently no load present on this dimmer.	Rerecord the load, or check for missing or burned-out lamp(s) on the circuit.

Appendix B
Dimmer Curves

Dimmer curves determine how dimmers set voltage output in response to control signal input. To accommodate designer preferences and load response variations, Sensor offers five dimmer curve choices, which can be applied to individual dimmers.

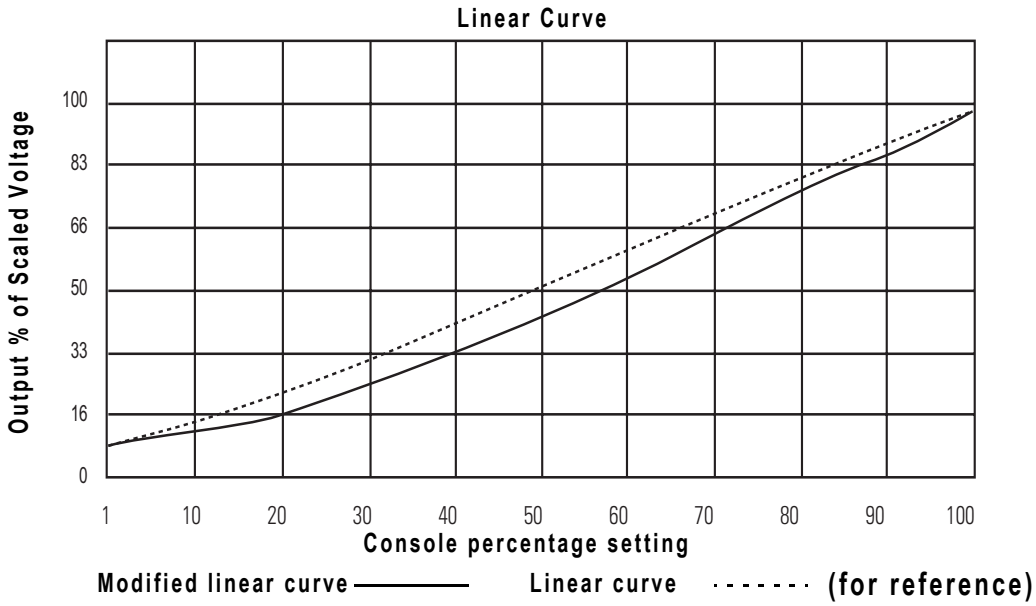
Linear curve

The linear curve matches the control input percentage to Root Mean Squared (RMS) voltage output. Each percent increase in control level increases dimmer voltage output by the same amount



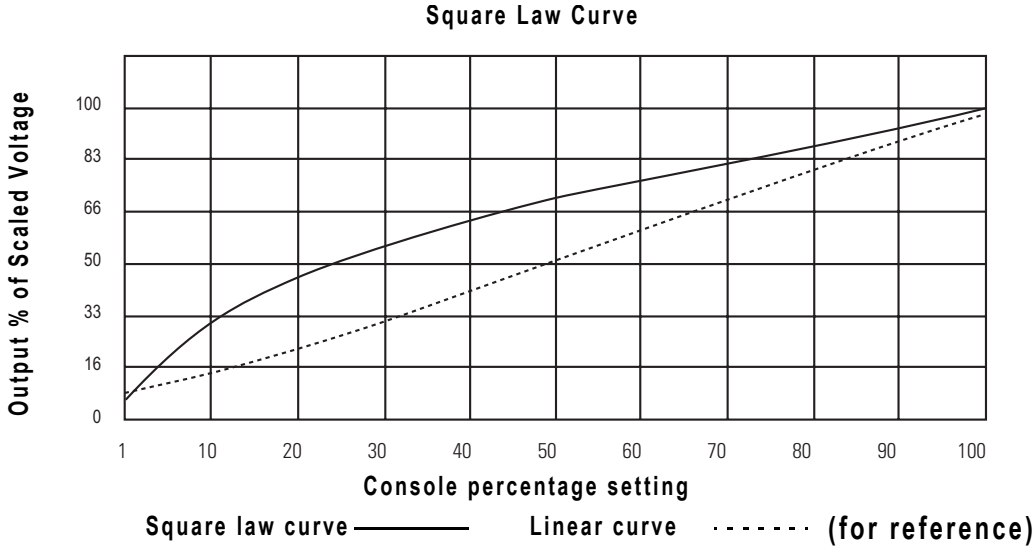
Modified linear curve

A modified linear curve reduces the voltage change at low control levels for better performance in low-wattage fixtures.



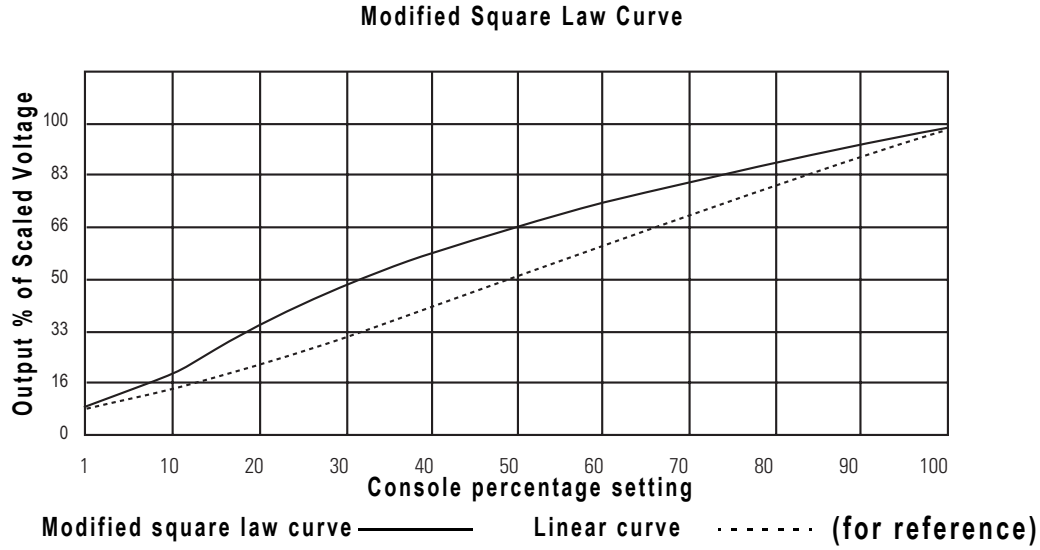
Square law curve

At low control levels, much of traditional incandescent fixture's light output is in the invisible infrared spectrum. This results in poor visible response to low control levels. A square law curve is derived from the square root of the control level (with full output equal to 1.00) to increase voltage response at low control levels to compensate for the infrared loss.



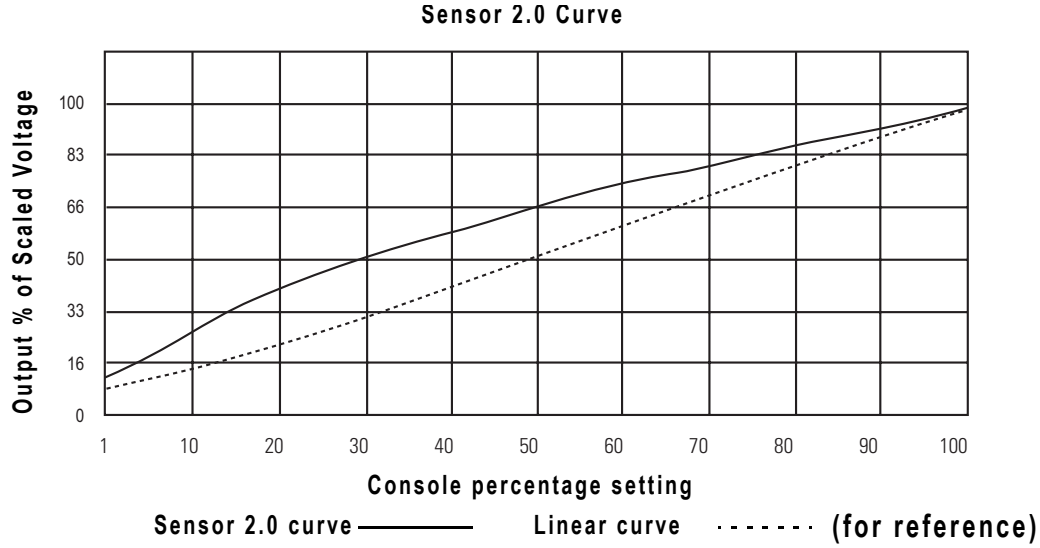
Modified Square law curve

A standard square law curve may overcompensate for infrared loss, resulting in “steppy” response to incremental control changes at low levels. ETC’s modified square law curve modifies the standard square law curve for more uniform response to control levels changes across the entire range of dimmer output,



Sensor 2.0 curve

The Sensor 2.0 curve is the previous version of ETC’s modified square law curve. It provides backwards compatibility for shows created using earlier versions of ETC equipment and familiar response for designers who prefer the earlier version.



Appendix C
Sensor+ SineWave Dimming

This appendix provides information for configuring a Sensor+ system that includes one or more UL and cUL approved Sensor+ SineWave dimmer installation racks.

SineWave Benefits

Sine wave dimming provides “silent dimming” by controlling the power in a way that maintains a clean sinusoidal wave form to your fixtures and does not create any “lamp noise” or “buzz”. Due to the added level of control, ETC SineWave dimming also provides superior voltage regulation.

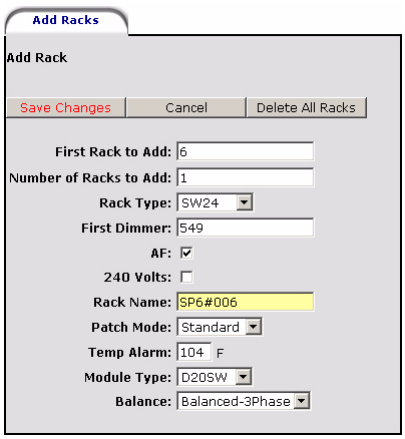
Other sine wave benefits include:

- Saves energy compared with phase-controlled dimmers
- Reduces volt-drop which means less heat dissipation
- Improves lamp life – lower maintenance costs
- Harmonic distortion is virtually eliminated
- Reduces cost of electricity by removing reactive component (Unity Power Factor)
- Saves on infrastructure costs – reduced size of wiring and containment plus lower-rated switch gear and transformers
- Accommodates generator supplies and poor mains
- Controls virtually all types of light source, even HMI

Configuration

SineWave (SW) racks are configured in the same way as SR racks. However, SW racks only use D20SW dimmers. All other rack and dimmer properties are set in the same way and coexist in your same rack configuration file.

- When adding a rack, select **SW24** from the rack type list.
- When selecting module type, choose **D20SW**.



D20SW Dimmer Module Default Properties

Property	120V
Firing Mode	Normal
Curve	Mod-Square Law
Threshold	1%
Min. Scale Voltage	6V
Max. Scale Voltage	115V
Voltage Regulation	Checked
Preheat	Unchecked
Dynamic Preheat	2 sec.
DC Output Prevent *	Unchecked
InRush Protect **	Unchecked
Advanced Features (AF)	Checked
Load Errors	Checked
AF Sensitivity	5
AF Reaction	10 sec.
Scale Load	35%

** ETC sine wave dimming produces no DC component so this function is unnecessary. Checking this may reduce the dimmer's response time by up to 8.3 msec.*

*** This feature is automatically in effect regardless of the setting because of the nature of ETC's sine wave dimming.*

SineWave Differences You Need to Know

The SineWave rack (SW24+) and module (D20SW) are very similar in most operational respects to SR racks and D20AF dimmers. However, there are a few notable differences listed here:

- D20SW dimmers have built-in electronic overcurrent protection and it is unlikely that you will ever see a breaker trip on a dimmer module. When an overcurrent event occurs the dimmer will shut itself off and the red overcurrent LED will come on.
  To reset the dimmer, bring the level of the dimmer to zero (0) for a minimum of 1 second and the dimmer will reset itself and begin to operate again.
- The power LED on D20SW's is blue instead of red as on other D20-family modules.
- The green signal LED on the D20SW module will not come on if the dimmer's breaker is turned off. On other D20-family modules, the green signal LED will continue to show the presence of level for the dimmer even if the dimmer breaker is turned off.
- If you pull the CEM+ out of a SineWave rack, the D20SW dimmers will remain on at the last level they had for 3 seconds and then fade out. This is a function of the dimmers losing communication with the CEM+.

Appendix D
UL924 Setup

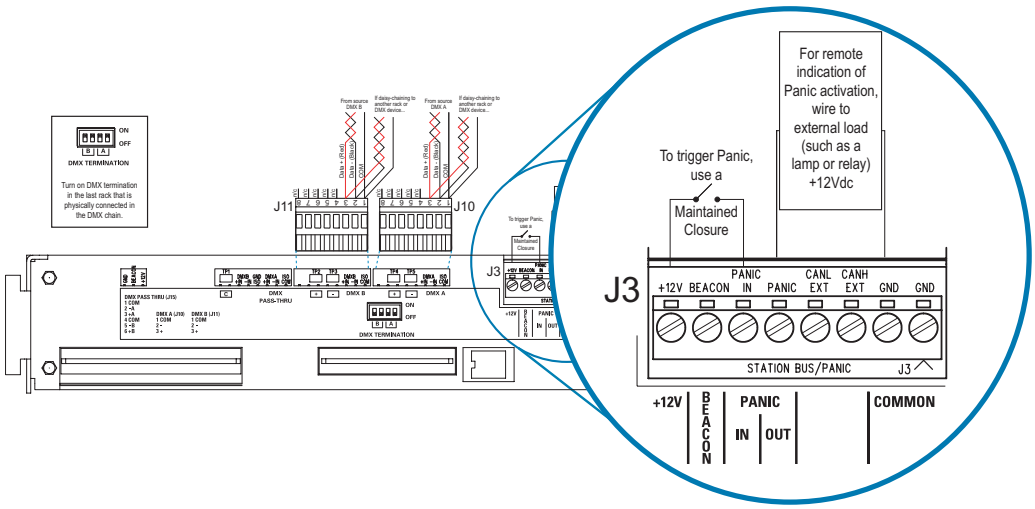
Introduction

This appendix provides information for configuring a Sensor+ system to operate within the UL924 specification.

WARNING: ***RISK OF ELECTRIC SHOCK! Failure to disconnect all power to the rack before working in the rack could result in serious injury or death.***

Terminations

A dry contact closure (maintained recommended) must be wired to each rack containing dimmers in the emergency look.



Configuration

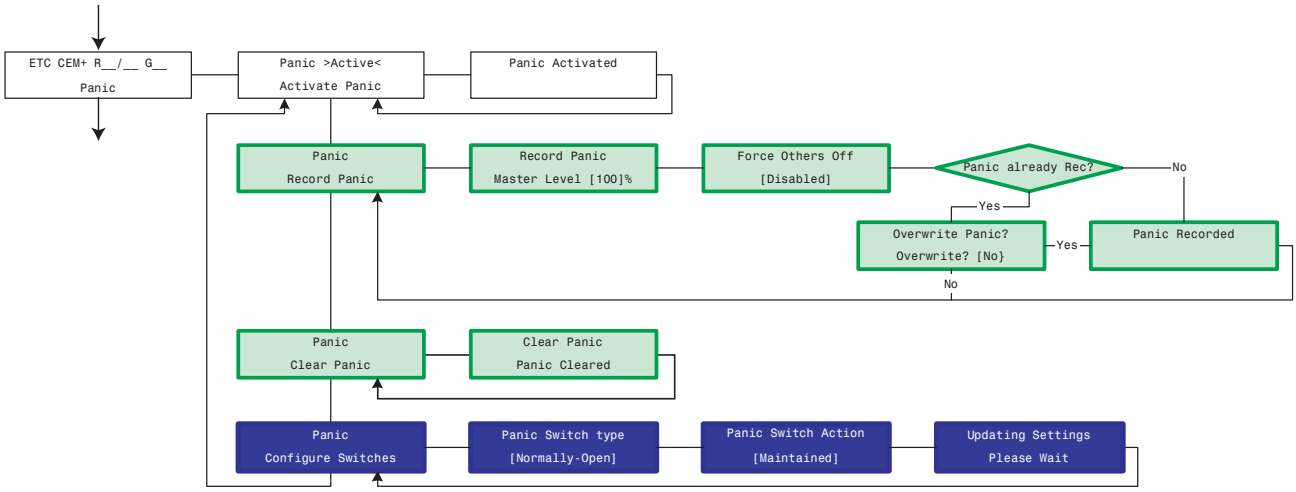
Step 1: Login to the CEM+ with at least Power User Level of access.

- CEM+ face panel PIN: **3333**
- Sensor+ Connect web interface - Login: **power** / password: **powerpass**

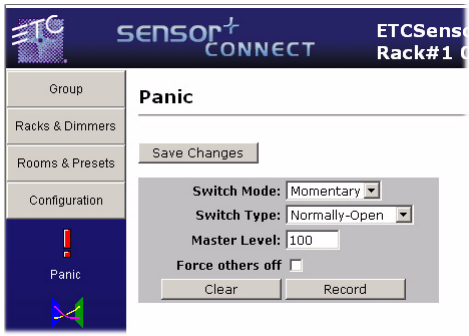
Step 2: Set the levels of the dimmers/lights you want in the emergency look to level of at least the Panic Master Level in the CEM+ (80 to 100% - defaults to 100%).

Step 3: Record Panic on the CEM+. Be sure the configuration closure type matches your actual physical closure type.

CEM+ LCD Panic Menu:



Sensor+ Connect web interface (Configuration>Panic):

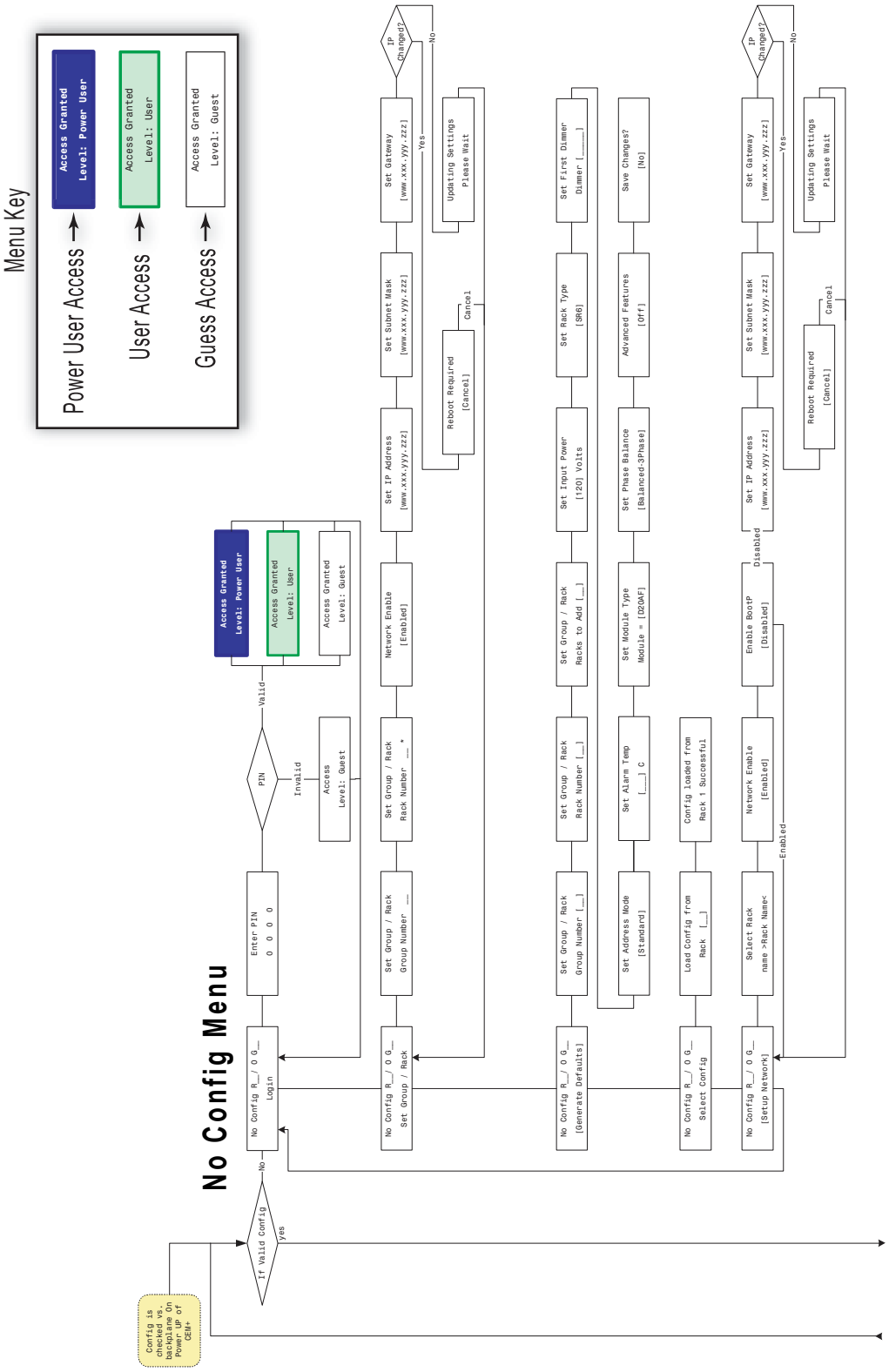


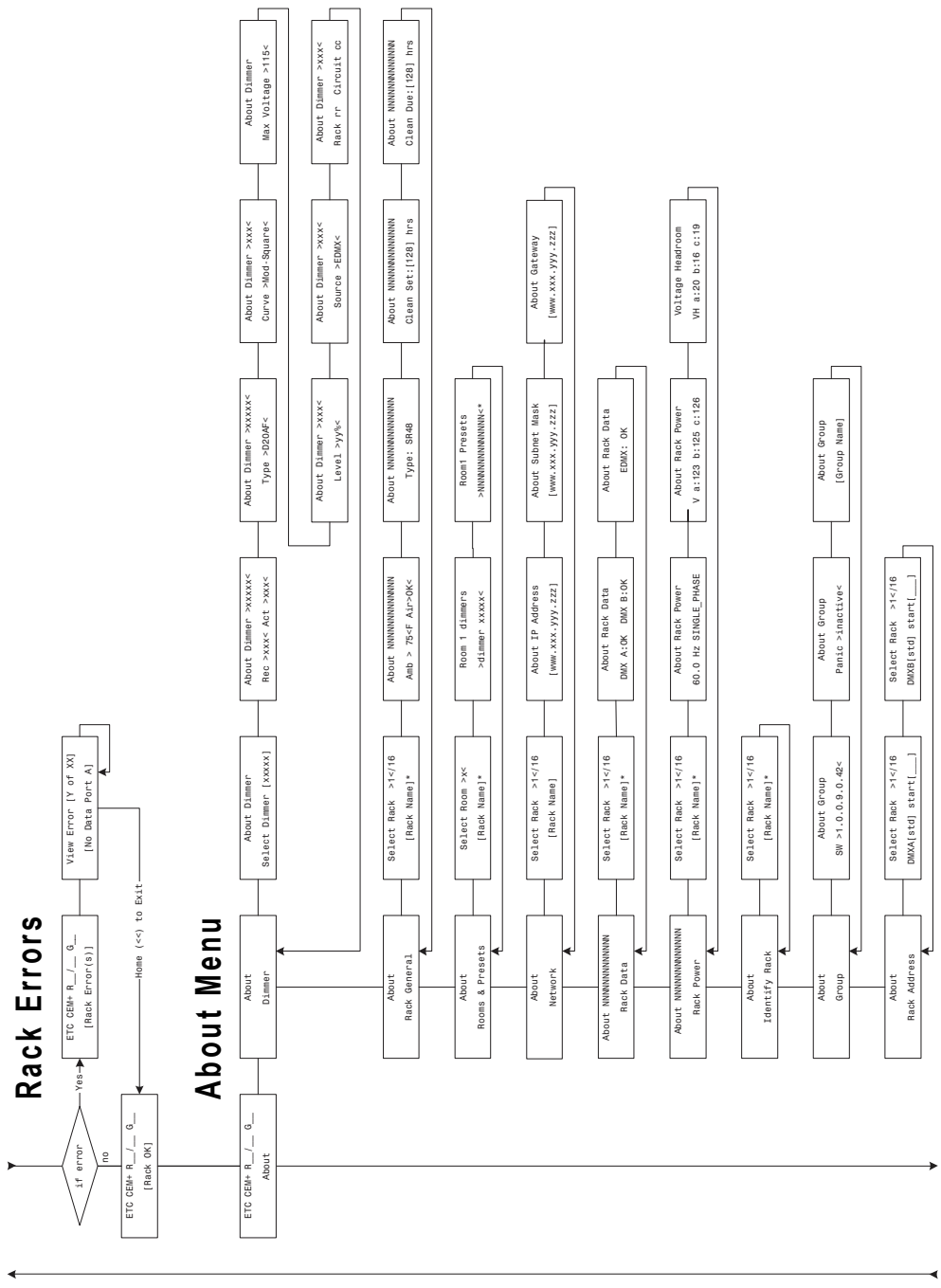
Testing

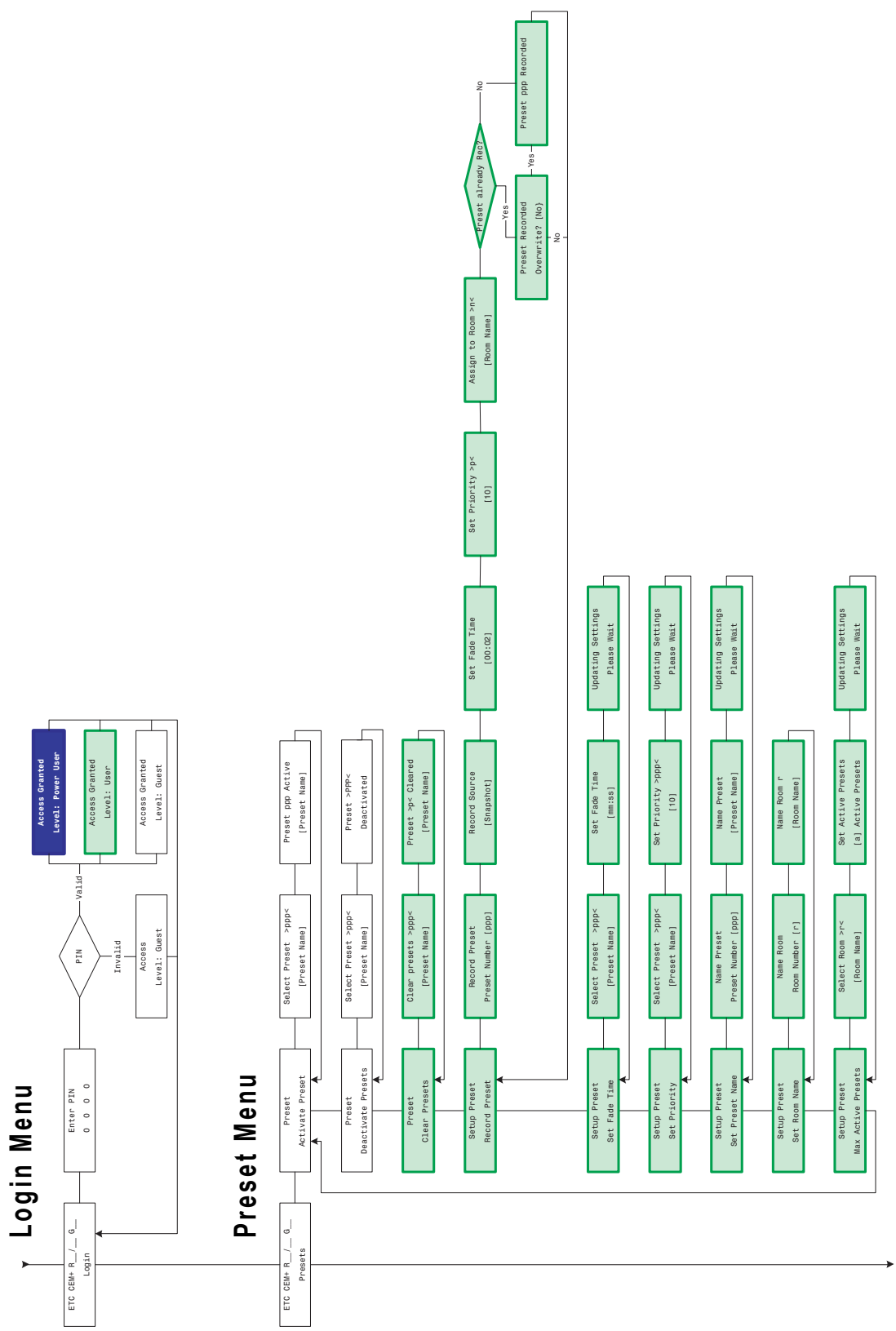
Local testing can be done by either installing a local test switch or by local activation of Panic via the CEM+ face panel.

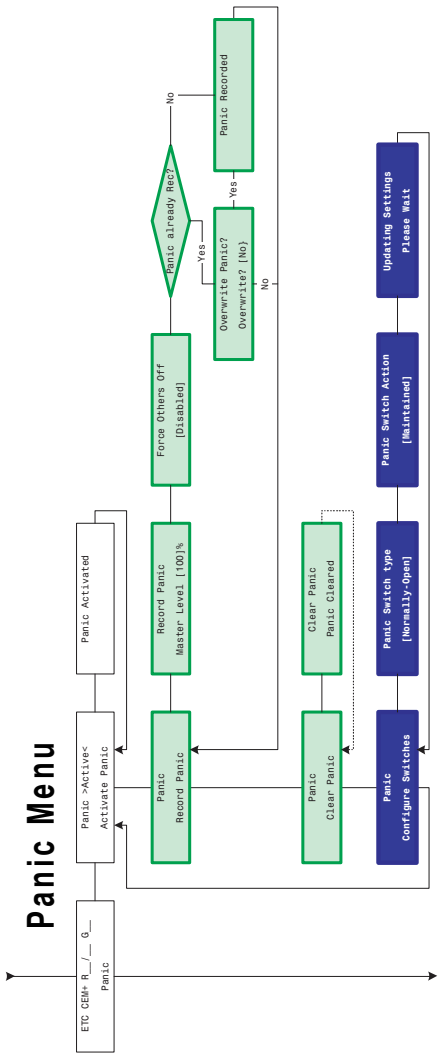
Appendix E: CEM+ LCD Menu

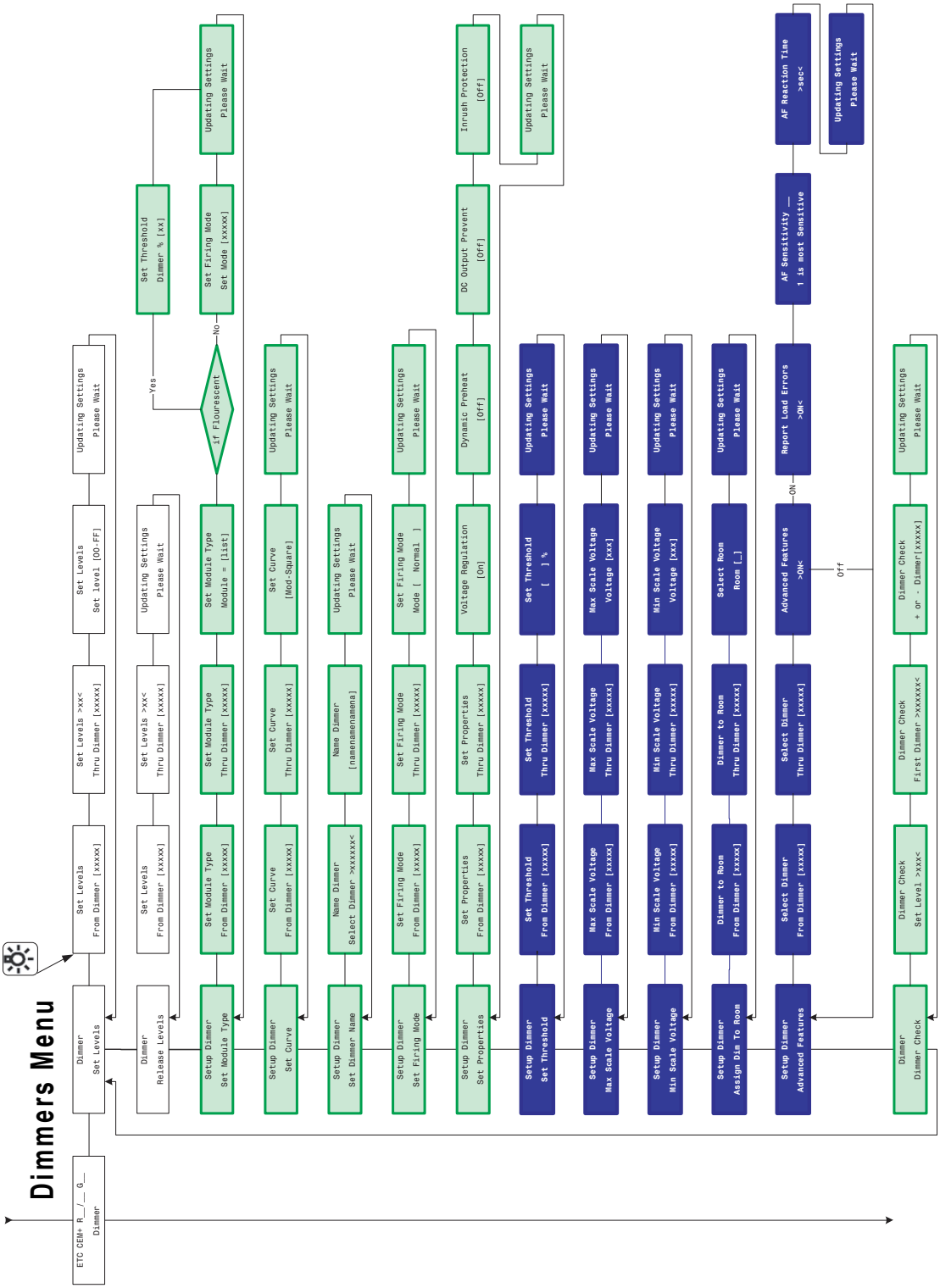
This appendix contains the entire LCD menu structure. Note that the different looks of the screens denotes a different user level required for access.

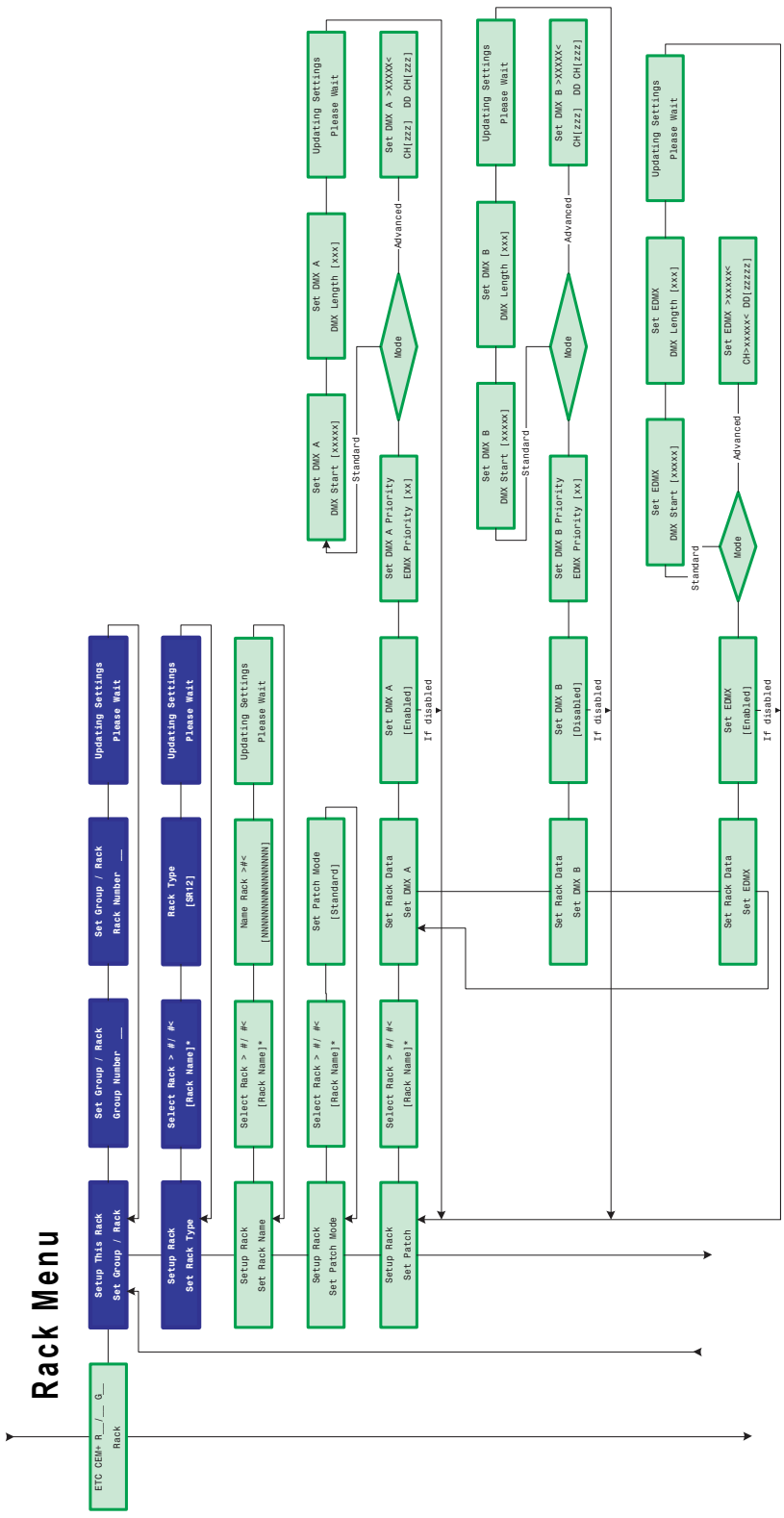


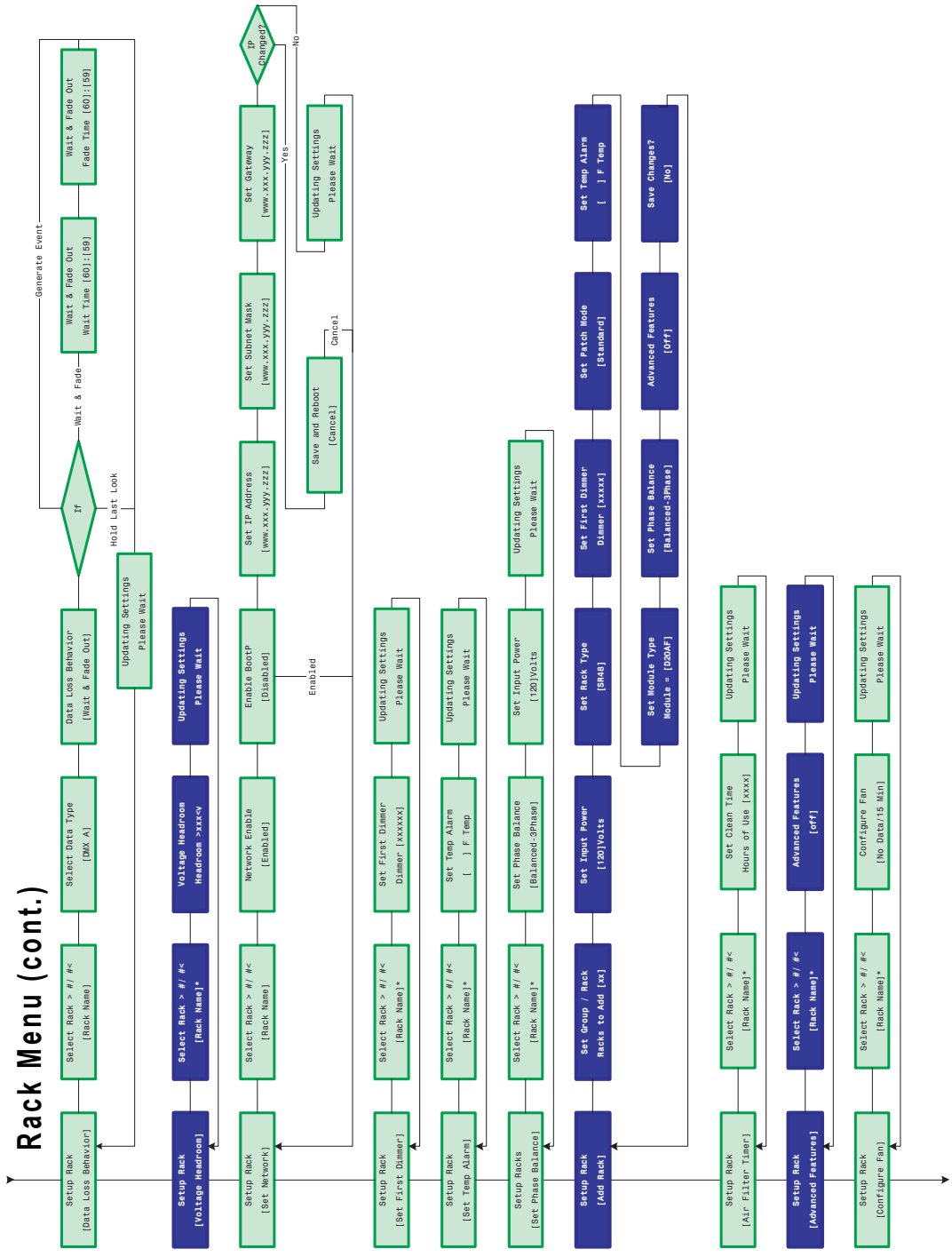

Rack Errors
ETC CEM+ R__/__ G__
About
if error
Yes
no
View Error [Y of XX]
[No Data Port A]
ETC CEM+ R__/__ G__
[Rack Error(s)]
ETC CEM+ R__/__ G__
[Rack OK]
Home (<<) to Exit
About Menu
About
Dimmer
About Dimmer
Select Dimmer [xxxxx]
About Dimmer >xxxxx<
Rec >xxx< Act >xxx<
About Dimmer >xxxxx<
Type >D20AF<
About Dimmer >xxx<
Curve >Mod-Square<
About Dimmer
Max Voltage >115<
About Dimmer >xxx<
Level >yy%<
About Dimmer >xxx<
Source >EDMX<
About Dimmer >xxx<
Rack rr Circuit cc
About
Rack General
Select Rack >1</16
[Rack Name]*
About NNNNNNNNNNNNN
Amb > 75<F Air>OK<
About NNNNNNNNNNNNN
Type: SR48
About NNNNNNNNNNNNN
Clean Set:[128] hrs
About NNNNNNNNNNNNN
Clean Due:[128] hrs
About
Rooms & Presets
Select Room >x<
[Rack Name]*
Room 1 dimmers
>dimmer xxxxx<
Room1 Presets
>NNNNNNNNNNNNN<*
About
Network
Select Rack >1</16
[Rack Name]
About IP Address
[www.xxx.yyy.zzz]
About Subnet Mask
[www.xxx.yyy.zzz]
About Gateway
[www.xxx.yyy.zzz]
About NNNNNNNNNNNNN
Rack Data
Select Rack >1</16
[Rack Name]*
About Rack Data
DMX A:OK DMX B:OK
About Rack Data
EDMX: OK
About NNNNNNNNNNNNN
Rack Power
Select Rack >1</16
[Rack Name]*
About Rack Power
60.0 Hz SINGLE_PHASE
About Rack Power
V a:123 b:125 c:126
Voltage Headroom
VH a:20 b:16 c:19
About
Identify Rack
Select Rack >1</16
[Rack Name]*
About
Group
About Group
SW >1.0.0.9.0.42<
About Group
Panic >inactive<
About Group
[Group Name]
About
Rack Address
Select Rack >1</16
DMXA[std] start[___]
Select Rack >1</16
DMXB[std] start[___]

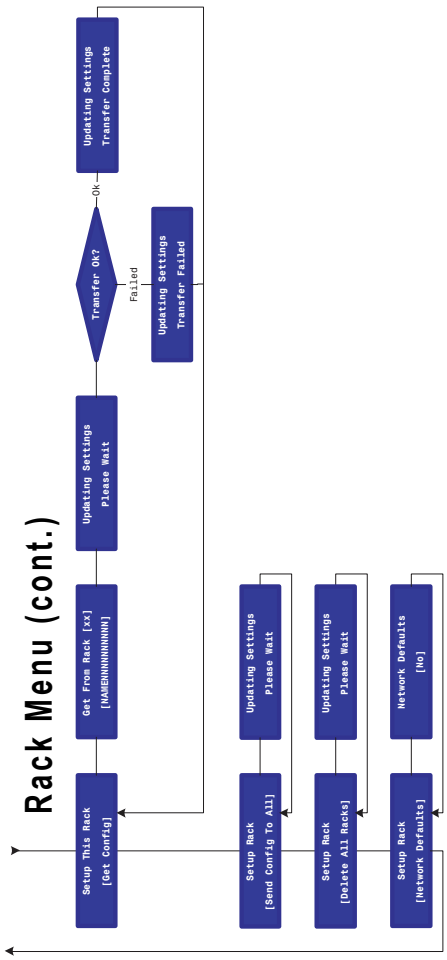

Login Menu
ETC CEM+ R__/__ G__
Login
Enter PIN
0 0 0 0
PIN
Valid
Invalid
Access Granted
Level: Power User
Access Granted
Level: User
Access Granted
Level: Guest
Access
Level: Guest
Preset Menu
ETC CEM+ R__/__ G__
Presets
Preset
Activate Preset
Preset
Deactivate Presets
Preset
Clear Presets
Setup Preset
Record Preset
Select Preset >ppp<
[Preset Name]
Preset ppp Active
[Preset Name]
Select Preset >ppp<
[Preset Name]
Preset >PPP<
Deactivated
Clear presets >ppp<
[Preset Name]
Preset >p< Cleared
[Preset Name]
Record Preset
Preset Number [ppp]
Record Source
[Snapshot]
Set Fade Time
[00:02]
Set Priority >p<
[10]
Assign to Room >n<
[Room Name]
Preset already Rec?
Yes
No
Preset Recorded
Overwrite? [No]
Yes
No
Preset ppp Recorded
Setup Preset
Set Fade Time
Select Preset >ppp<
[Preset Name]
Set Fade Time
[mm:ss]
Updating Settings
Please Wait
Setup Preset
Set Priority
Select Preset >ppp<
[Preset Name]
Set Priority >ppp<
[10]
Updating Settings
Please Wait
Setup Preset
Set Preset Name
Name Preset
Preset Number [ppp]
Name Preset
[Preset Name]
Updating Settings
Please Wait
Setup Preset
Set Room Name
Name Room
Room Number [r]
Name Room r
[Room Name]
Setup Preset
Max Active Presets
Select Room >r<
[Room Name]
Set Active Presets
[a] Active Presets
Updating Settings
Please Wait

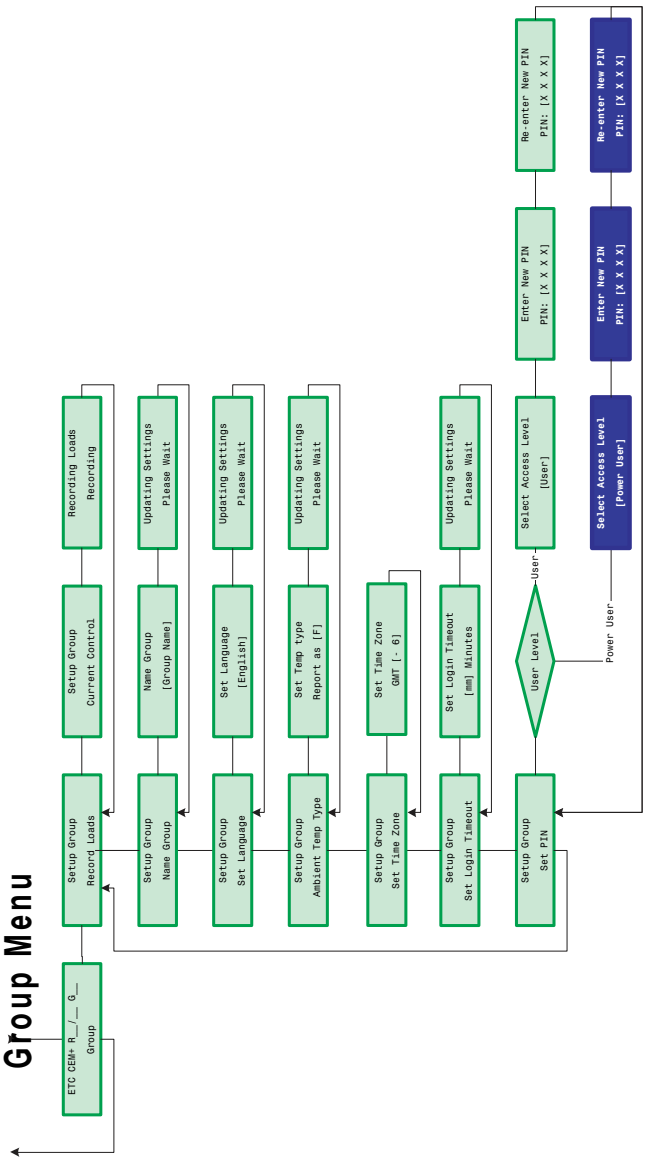

Panic Menu
ETC CEM+ R__/__ G__
Panic
Panic >Active<
Activate Panic
Panic Activated
Panic
Record Panic
Record Panic
Master Level [100]%
Force Others Off
[Disabled]
Panic already Rec?
No
Yes
Overwrite Panic?
Overwrite? [No]
Yes
No
Panic Recorded
Panic
Clear Panic
Clear Panic
Panic Cleared
Panic
Configure Switches
Panic Switch type
[Normally-Open]
Panic Switch Action
[Maintained]
Updating Settings
Please Wait


Dimmers Menu
ETC CEM+ R__/__ G__
Dimmer
Dimmer
Set Levels
Dimmer
Release Levels
Setup Dimmer
Set Module Type
Setup Dimmer
Set Curve
Setup Dimmer
Set Dimmer Name
Setup Dimmer
Set Firing Mode
Setup Dimmer
Set Properties
Setup Dimmer
Set Threshold
Setup Dimmer
Max Scale Voltage
Setup Dimmer
Min Scale Voltage
Setup Dimmer
Assign Dim To Room
Setup Dimmer
Advanced Features
Dimmer
Dimmer Check
Set Levels
From Dimmer [xxxxx]
Set Levels >xx<
Thru Dimmer [xxxxx]
Set Levels
Set level [00-FF]
Updating Settings
Please Wait
Set Levels
From Dimmer [xxxxx]
Updating Settings
Please Wait
Updating Settings
Please Wait
Set Module Type
From Dimmer [xxxxx]
Set Module Type
Thru Dimmer [xxxxx]
Set Module Type
Module = [list]
if Flourescent
Yes
No
Set Threshold
Dimmer % [xx]
Set Firing Mode
Set Mode [xxxxx]
Updating Settings
Please Wait
Set Curve
From Dimmer [xxxxx]
Set Curve
Thru Dimmer [xxxxx]
Set Curve
[Mod-Square]
Updating Settings
Please Wait
Name Dimmer
Select Dimmer >xxxxxxx<
Name Dimmer
[namenamenamena]
Updating Settings
Please Wait
Set Firing Mode
From Dimmer [xxxxx]
Set Firing Mode
Thru Dimmer [xxxxx]
Set Firing Mode
Mode [Normal]
Updating Settings
Please Wait
Set Properties
From Dimmer [xxxxx]
Set Properties
Thru Dimmer [xxxxx]
Voltage Regulation
[On]
Dynamic Preheat
[Off]
DC Output Prevent
[Off]
Inrush Protection
[Off]
Set Threshold
From Dimmer [xxxxx]
Set Threshold
Thru Dimmer [xxxxx]
Set Threshold
[ ] %
Updating Settings
Please Wait
Updating Settings
Please Wait
Max Scale Voltage
From Dimmer [xxxxx]
Max Scale Voltage
Thru Dimmer [xxxxx]
Max Scale Voltage
Voltage [xxx]
Updating Settings
Please Wait
Min Scale Voltage
From Dimmer [xxxxx]
Min Scale Voltage
Thru Dimmer [xxxxx]
Min Scale Voltage
Voltage [xxx]
Updating Settings
Please Wait
Dimmer to Room
From Dimmer [xxxxx]
Dimmer to Room
Thru Dimmer [xxxxx]
Select Room
Room [_]
Updating Settings
Please Wait
Select Dimmer
From Dimmer [xxxxx]
Select Dimmer
Thru Dimmer [xxxxx]
Advanced Features
>OK<
ON
Off
Report Load Errors
>OK<
AF Sensitivity __
1 is most Sensitive
AF Reaction Time
>sec<
Updating Settings
Please Wait
Dimmer Check
Set Level >xxx<
Dimmer Check
First Dimmer >xxxxxx<
Dimmer Check
+ or - Dimmer[xxxxx]
Updating Settings
Please Wait


Rack Menu
ETC CEM+ R__/__ G__
Rack
Setup This Rack
Set Group / Rack
Set Group / Rack
Group Number __
Set Group / Rack
Rack Number __
Updating Settings
Please Wait
Setup Rack
Set Rack Type
Select Rack > #/ #<
[Rack Name]*
Rack Type
[SR12]
Updating Settings
Please Wait
Setup Rack
Set Rack Name
Select Rack > #/ #<
[Rack Name]*
Name Rack >#<
[NNNNNNNNNNNNNNN]
Updating Settings
Please Wait
Setup Rack
Set Patch Mode
Select Rack > #/ #<
[Rack Name]*
Set Patch Mode
[Standard]
Setup Rack
Set Patch
Select Rack > #/ #<
[Rack Name]*
Set Rack Data
Set DMX A
Set DMX A
[Enabled]
If disabled
Mode
Standard
Advanced
Set DMX A
DMX Start [xxxxx]
Set DMX A
DMX Length [xxx]
Updating Settings
Please Wait
Set DMX A Priority
EDMX Priority [xx]
Set DMX A >XXXXX<
CH[zzz] DD CH[zzz]
Setup Rack
Set DMX B
Select Rack > #/ #<
[Rack Name]*
Set Rack Data
Set DMX B
Set DMX B
[Disabled]
If disabled
Mode
Standard
Advanced
Set DMX B
DMX Start [xxxxx]
Set DMX B
DMX Length [xxx]
Updating Settings
Please Wait
Set DMX B Priority
EDMX Priority [xx]
Set DMX B >XXXXX<
CH[zzz] DD CH[zzz]
Setup Rack
Set EDMX
Select Rack > #/ #<
[Rack Name]*
Set Rack Data
Set EDMX
Set EDMX
[Enabled]
If disabled
Mode
Standard
Advanced
Set EDMX
DMX Start [xxxxx]
Set EDMX
DMX Length [xxx]
Updating Settings
Please Wait
Set EDMX >xxxxx<
CH>xxxxx< DD[zzzzz]

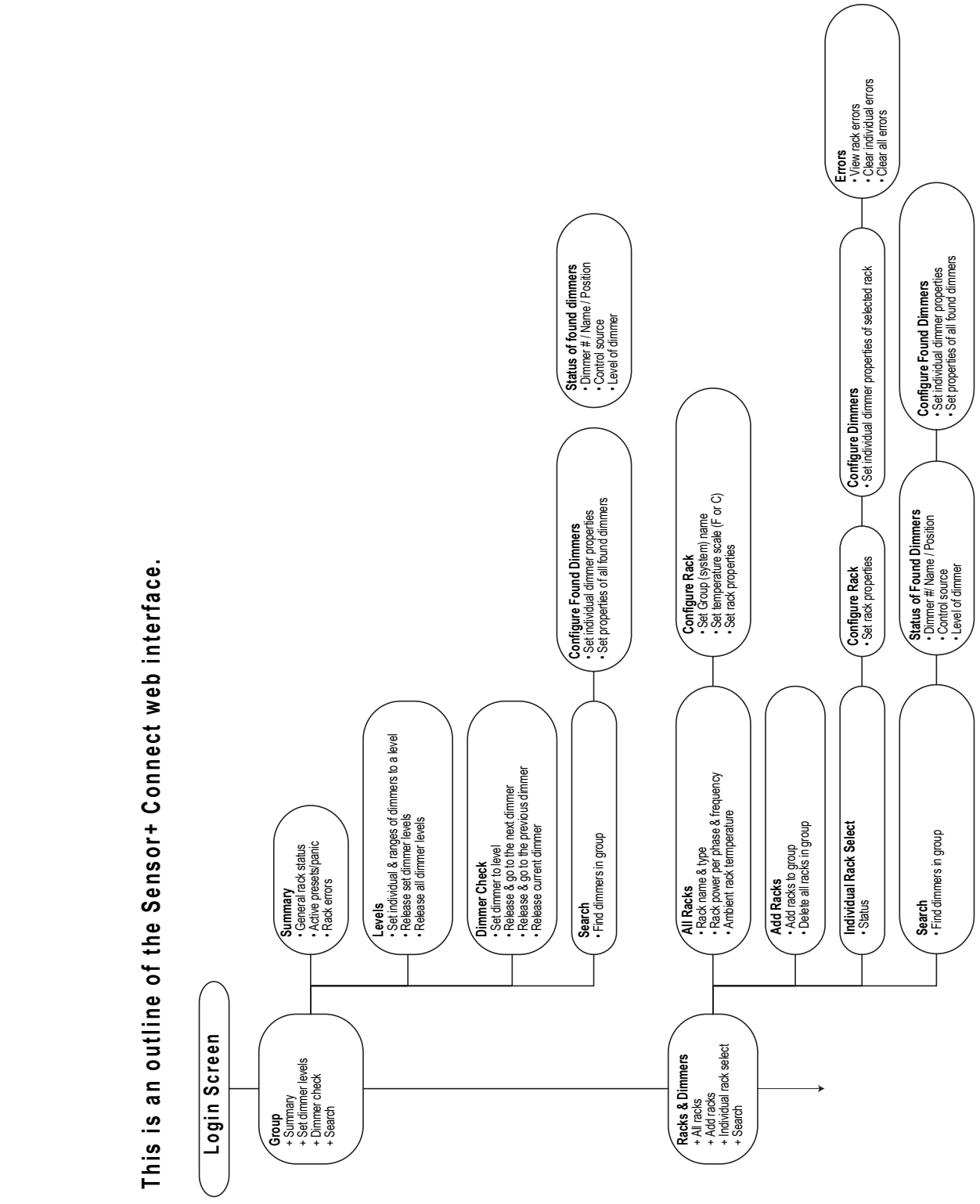

Rack Menu (cont.)
Setup Rack [Data Loss Behavior]
Select Rack > #/ #< [Rack Name]
Select Data Type [DMX A]
Data Loss Behavior [Wait & Fade Out]
If
Wait & Fade
Wait & Fade Out Wait Time [60]:[59]
Wait & Fade Out Fade Time [60]:[59]
Generate Event
Hold Last Look
Updating Settings Please Wait
Setup Rack [Voltage Headroom]
Select Rack > #/ #< [Rack Name]*
Voltage Headroom Headroom >xxx<v
Updating Settings Please Wait
Setup Rack [Set Network]
Select Rack > #/ #< [Rack Name]
Network Enable [Enabled]
Enable BootP [Disabled]
Set IP Address [www.xxx.yyy.zzz]
Set Subnet Mask [www.xxx.yyy.zzz]
Set Gateway [www.xxx.yyy.zzz]
IP Changed?
Yes
No
Updating Settings Please Wait
Save and Reboot [Cancel]
Cancel
Enabled
Setup Rack [Set First Dimmer]
Select Rack > #/ #< [Rack Name]*
Set First Dimmer Dimmer [xxxxxx]
Updating Settings Please Wait
Setup Rack [Set Temp Alarm]
Select Rack > #/ #< [Rack Name]*
Set Temp Alarm [ ] F Temp
Updating Settings Please Wait
Setup Racks [Set Phase Balance]
Select Rack > #/ #< [Rack Name]*
Set Phase Balance [Balanced-3Phase]
Set Input Power [120]Volts
Updating Settings Please Wait
Setup Rack [Add Rack]
Set Group / Rack Racks to Add [xx]
Set Input Power [120]Volts
Set Rack Type [SR40]
Set First Dimer Dimer [xxxxx]
Set Patch Mode [Standard]
Set Temp Alarm [ ] F Temp
Set Module Type Module = [D20AF]
Set Phase Balance [Balanced-3Phase]
Advanced Features [Off]
Save Changes? [No]
Setup Rack [Air Filter Timer]
Select Rack > #/ #< [Rack Name]*
Set Clean Time Hours of Use [xxxx]
Updating Settings Please Wait
Setup Rack [AdVanced Features]
Select Rack > #/ #< [Rack Name]*
Advanced Features [Off]
Updating Settings Please Wait
Setup Rack [Configure Fan]
Select Rack > #/ #< [Rack Name]*
Configure Fan [No Data/15 Min]
Updating Settings Please Wait

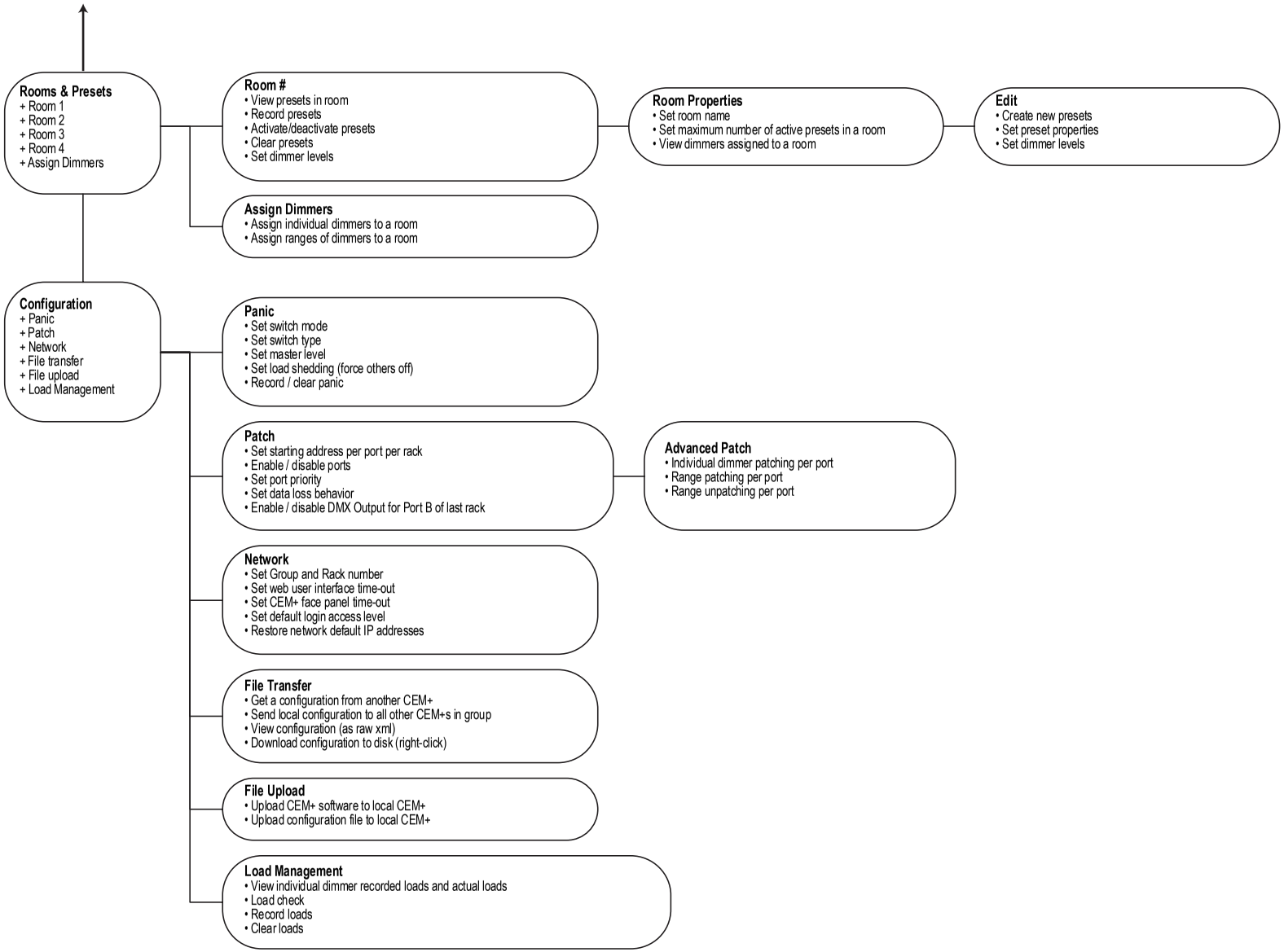

Rack Menu (cont.)
Setup This Rack
[Get Config]
Get From Rack [xx]
[NAMENNNNNNNNN]
Updating Settings
Please Wait
Transfer Ok?
Ok
Failed
Updating Settings
Transfer Complete
Updating Settings
Transfer Failed
Setup Rack
[Send Config To All]
Updating Settings
Please Wait
Setup Rack
[Delete All Racks]
Updating Settings
Please Wait
Setup Rack
[Network Defaults]
Network Defaults
[No]


Group Menu
ETC CEM+ R__/__ G__
Group
Setup Group
Record Loads
Recording Loads
Recording
Setup Group
Name Group
Updating Settings
Please Wait
Setup Group
Set Language
Updating Settings
Please Wait
Setup Group
Ambient Temp Type
Updating Settings
Please Wait
Setup Group
Set Time Zone
Set Time Zone
GMT [- 0]
Setup Group
Set Login Timeout
Updating Settings
Please Wait
Setup Group
Set PIN
Select Access Level
[User]
Enter New PIN
PIN: [X X X X]
Re-enter New PIN
PIN: [X X X X]
Select Access Level
[Power User]
Enter New PIN
PIN: [X X X X]
Re-enter New PIN
PIN: [X X X X]
User Level
User
Power User
Setup Group
Current Control
Name Group
[Group Name]
Set Language
[English]
Set Temp type
Report as [F]
Set Login Timeout
[nnn] Minutes

Appendix F

Sensor+ Connect Site Map


This is an outline of the Sensor+ Connect web interface.
Login Screen
Group
+ Summary
+ Set dimmer levels
+ Dimmer check
+ Search
Summary
• General rack status
• Active presets/panic
• Rack errors
Levels
• Set individual & ranges of dimmers to a level
• Release set dimmer levels
• Release all dimmer levels
Dimmer Check
• Set dimmer to level
• Release & go to the next dimmer
• Release & go to the previous dimmer
• Release current dimmer
Search
• Find dimmers in group
Configure Found Dimmers
• Set individual dimmer properties
• Set properties of all found dimmers
Status of found dimmers
• Dimmer # / Name / Position
• Control source
• Level of dimmer
Racks & Dimmers
+ All racks
+ Add racks
+ Individual rack select
+ Search
All Racks
• Rack name & type
• Rack power per phase & frequency
• Ambient rack termperature
Configure Rack
• Set Group (system) name
• Set temperature scale (F or C)
• Set rack properties
Add Racks
• Add racks to group
• Delete all racks in group
Individual Rack Select
• Status
Configure Rack
• Set rack properties
Configure Dimmers
• Set individual dimmer properties of selected rack
Errors
• View rack errors
• Clear individual errors
• Clear all errors
Search
• Find dimmers in group
Status of Found Dimmers
• Dimmer #/ Name / Position
• Control source
• Level of dimmer
Configure Found Dimmers
• Set individual dimmer properties
• Set properties of all found dimmers


Rooms & Presets
+ Room 1
+ Room 2
+ Room 3
+ Room 4
+ Assign Dimmers
Room #
• View presets in room
• Record presets
• Activate/deactivate presets
• Clear presets
• Set dimmer levels
Room Properties
• Set room name
• Set maximum number of active presets in a room
• View dimmers assigned to a room
Edit
• Create new presets
• Set preset properties
• Set dimmer levels
Assign Dimmers
• Assign individual dimmers to a room
• Assign ranges of dimmers to a room
Configuration
+ Panic
+ Patch
+ Network
+ File transfer
+ File upload
+ Load Management
Panic
• Set switch mode
• Set switch type
• Set master level
• Set load shedding (force others off)
• Record / clear panic
Patch
• Set starting address per port per rack
• Enable / disable ports
• Set port priority
• Set data loss behavior
• Enable / disable DMX Output for Port B of last rack
Advanced Patch
• Individual dimmer patching per port
• Range patching per port
• Range unpatching per port
Network
• Set Group and Rack number
• Set web user interface time-out
• Set CEM+ face panel time-out
• Set default login access level
• Restore network default IP addresses
File Transfer
• Get a configuration from another CEM+
• Send local configuration to all other CEM+s in group
• View configuration (as raw xml)
• Download configuration to disk (right-click)
File Upload
• Upload CEM+ software to local CEM+
• Upload configuration file to local CEM+
Load Management
• View individual dimmer recorded loads and actual loads
• Load check
• Record loads
• Clear loads

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